

PHotomontage: Henk Bos

Grinding and honing. Part 3

INFO 20M

Information for ship and tool-lovers

Number 70 March 2013

INFO 20M
Information paper great pleasure boats and toollovers

The paper "great pleasure boats" is meant for owners, skippers and other interested parties of recreational vessels over 20 meters such as:
- Former inland vessels
- Former Marine vessels
- Former fishing vessels
- Former Navy ships
- Former tugs and pushboats
- Houseboats
- Recreational vessels specifically built for that purpose.

The magazine INFO-20M "great pleasure boats" provides this target group with information about nautical law and the (technical) equipment on board the ship.

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- The Association Motor Tug (VDMS) and the Association of the Tugboat (VDS)
- The Flemish Association for Water Sports (VVW)
- Zeekadetkorps Netherlands (ZKK)
- Scouting Netherlands (SN)
Other organizations may contact the publisher. Info 20M can also be downloaded through the website.

20M is a continuation of the series of information leaflets called M3-magazine, written in the period 1987 to 1995 for Scouting groups with a guard ship (a former barge used as a Scout clubhouse).
M3 magazine No. 1 to 20 can be downloaded via the index on the website (http://www.xs4all.nl/ ~ bds/m3-index.htm).

Introduction

One of the most important skills a skilled artisan can acquire is the ability to grind a tool quick and good. Working with hand tools can be a frustrating experience, unless the tool is sharp. With the right knowledge and the best whetstones sharp tools can be achieved in a consistent manner. This knowledge is gradually getting lost and this is an attempt to keep the information available in a modern way accessible. This work is an attempt but far from complete. That can not be possible because it includes many countries whose language I do not speak. That is why I am not able to dive into the craft history.

My attempt might be the impetus for others to put their knowledge onto paper or to make it available via electronic records.

The aim of this story is
* Capturing the available information on natural whetstones.
* To provide a starting craftsman with useful information to orient themselves, to recognize stones and choose from the many available natural whetstones, used and unused.

Henk Bos

See for Chapter 1 t / m 3:
http://bosq.home.xs4all.nl/info%2020m/info_20m-60.pdf

See for Chapter 4 t / m 5::
http://bosq.home.xs4all.nl/info%2020m/info_20m-66.pdf

Chapter 6 Summary natural whetstones in Europe with 2-letter country code (ISO 3166-1)
The cyan colored parts will come in due course!

* AT Austria - Bregenzersteen
* AT Austria - Gosauersteen
* BE Belgium - Coticule
* BE Belgium - Belgische blauwe
* BE Belgium - Gres
* BE Belgium - Lorraine
* BE Belgium - Dressante
* BE Belgium - Veignette



* CZ Tjechië - Piscovec - Bridlice - Marmor, The story about, Scythe stones, Adresses.
* CZ Tjechië - Godula Reka-Sandstone, Teschener Sandstone oder Těšínský pískovec.
* CH Suise - Ammergau



* DE Germany - Bad Berleburg Mysterie stone





* DE Germany - Bentheimer en Gildehauser sandstone, Sandstone ridge, The Binding (matrix), Two color variations, Gildehaus sandstone, Bentheimer sandstone, Bentheim castle - stone rich, Geological open air museum Bornhalm, Sandstone museum, Kuhlkerl.
* DE Germany - Bremer, Oberkirchenen, Bückeberg, Weser sandstone
* DE Germany - Ruhr, Bergischer sandstone

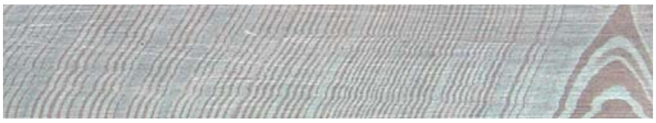


* DE Germany - SpiegelbergWetzsteinstollen, Bergbauwlehrpad, Opening times and tours.
* DE Germany - Thuringer, Escher, Faso, Franke etc.
* ES Spain - Pedra das Meigas.
* FR France - Darney, Saurat.

Great-Brittain



* GB England, **Charnley Forest Hone**, Introduction, The area, Varieties, Manufacturing the whetstones, Safety and Awareness, Quarrys, Thringston quarry, Wittle Hill quarry, An excerpt from our travelogue of Saturday, May 19, 2012, Visit to Whittle Hill Quarry, Charnwood quarry, Conclusion



* GB England, **Moughton Whetstone**, The rock, The reference of the quarry, Another route, The stones.



* GB Schotland, **Water of Ayr and Tam O'Shanter hone works** - Introduction, Shape of the grain, History of the Water of Ayr Stone, the factory and the company, The product range, Robert Burns, Tam o 'Shanter, The quarry and mine, The hone factory, A little travelogue, Thusday May 3th, 2012, Friday May 4, Excursion, Locations of quarries, mines and works, The stones, Water of Ayr - Meikledale quarry, The Dark Blue Water of Ayr - Enterkine quarry, Tam O'Shanter - Dalmore Quarry, Dalmore Blue - Craiksland Quarry, Dalmore Yellow, Dual grit, Found labels, Summary of stones.
* GB Wales Cutlers green.



* GB Wales Gwespyr stone, Waun Y Llyn stone



* GB Wales Inigo Jones Dragon's Tonque, History, The slate, The company, DT tested, Observations, Conclusion, Address.



* GB Wales Llyn Idwal (Grecian hone), Location, Foottpath, The quarry, One slipstone and some Llyn Idwal bankstones.
* GB Wales Yellow Lake Oilstone
* GR Griece - Kreta - Elounda; Turkey stone; Turkish Oilstone; Stone of the East; Petra Incognita; Cretan (oil)stone; Pierre de (du) Levant; Vera Candia; Akonopetra; Halkodaman akonan; Turkey stones; Naxos stone.
* GR Griece - Naxos; Emeri Peninula; smyris.
* HU Hungary
* IT Italy - Pradalung Pietri coti, 2 Medaglie, Green Dragon
* IT Italy - Serena sandstone

Viking Scandinavia:



* FI Finland - Paakkolan öljyhiettä



* FI Finland - Wästikivi Oy and Kuntalitokivi. History, The area, The old grinding mill, Interlude book 'Flood', a visit to the quarrys, Some old closed quarrys, The wastikivi, Some old labels, Stone with tree types of fineness, The blue Orivesi Kuntaliitoskivi stone (Yliskylä quarry), Putting into operation, Grain, Experiment, Some stones.



* NO Norway - Eidsborg Ragstone, History, Klåstad ship, The whetstone material, From rock to hone, Industrialization, Transportation to Skien, On the internet is a school film, Walk, The Telemark Museum, The Vikings, Turid Fiskarbekk - kjempekvinne, Pramsteinen, Burnt Eidsborg, The results.



* NO Norway - Hylestad, Introduction, History, Museum, Torbjørn Løland the stoneman.



* SE Sweden - Gotland en Gränsfors puck, The occurrence in the nature, The composition of Gotland sandstone, The use for construction and decorative arts, Brugsviks sandstone museum Kettelvik, A tour of the museum building, A tour of the site, Sources, The stones.



* SE Sweden - Lemunda sandstone, History, The location, History Lemunda Sandstensbrott, Some stones.



* SE Sweden - Loosbryne, Introduction, History, The existing water powered saw mill, Whetstone sawmill in Karlsmyr, Cutler and whetstone maker, Contemporary whetstone production, Some old stones, Ebay Los Bryne, Various images.



* SE Sweden - Orsa sten, Orsa sandstone (Silurian), The history of the grindstone in Mässbacken, Museum, Craftsmanship, Torsten Lenner, The stones.



* SK Slowakia - Rozsutek, Location, The stone, Lubomír Krivoš the last whetstone creator, Address, Test.
* TR Turkije - Anatolia stones; Billemy Tasi.

Hoofdstuk 7 Specials
* CA Br Columbia Canada Jade 6,5-7 Mohs



* US Hindostan Whetstone, Introduction, Identifying, The history of Hindostan whetstone,The use.
* US Washita en Arkansas

Hoofdstuk 8
8a Abrassivity test.
8b Determination table.
8c Index to words.

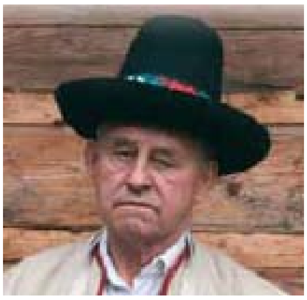
Chapter 6 European hone stones



The sites are approximately indicated.

CZ Pískovec - Bridlice - Mramor

The story



The story of these stones is inextricably linked to Jaroslav Suchácek sr born on March 25, 1936 in Lhota u Vsetína, a town in the northeast of the Czech Republic, where he still lives.

He comes from a family with a long local history and continues the tradition of the neighborhood brouskaru Vsetín. Lhota u Vsetína is a part of the former kingdom of Wallachia that runs into Slovakia. The area has a distinctive nature, settlement history, with keeping sheep, toiling the little fertile soil and using the forest. Together this gives until now their own folk culture and own language, significantly different from the written language. You can find more on this in the Wallachian Museum: Valašské muzeum v prirode. Palackého 147, 756 61 Ro   nov pod Radhoštem,
tel: +420 / 571 757 111.

After his military service he was briefly employed in agriculture where in winter whetstones were made as traditional cottage industry.

This cottage industry "Brouskarství" already has been documented in the second half of the 17th century.
The peak was in the 19th century and the first half of the 20th century. Together with other cottage industry it became specifical for this part of the character of Wallachia, that had great influence on the general character of the various municipalities.



The technology of making whetstone Jaroslav learned from his father Jaroslav Suchácka (1901-1971).
As a craftsman, he demonstrated the making of whetstones in the little wooden town of the Wallachian Museum.
In 1984 Jaroslav Suchácek sr won the title of "Master of Folk Art Production ÚLUV".
After which he demonstrated at major festivals and museums at home and abroad - in England, Belgium, France, Germany, Slovakia and Switzerland. After winning the title became Jaroslav Suchácka gradually independent and devoted himself exclusively to the production of whetstones.
Since 1989, Jarolav produces traditional whetstones as a private entrepreneur in his hometown Lhota u Vsetína.
His company is registered for the production of whetstones, lures and tradional pocket knifes. Currently he works at home in his studio and pases on his experience and knowledge to his son Jaroslav Suchácek and his grandson, again a Jaroslav Suchácek.



We found the son Jaroslav Suchácek Jr. in the little wooden village in the Wallachian open-air museum in Roznov Radhoštem.
3 types of whetstones come from the workshop of the family Suchácek namely sandstone (pískovec), slate (bridlice) and marble (Mramor).



* The blue fine-grained sandstone occures only on a few locations namely Vsetinsko, Horice and Trutnov.
This natural sandstone gives a medium-fine result with water. With oil the stone loses it's grinding effect.

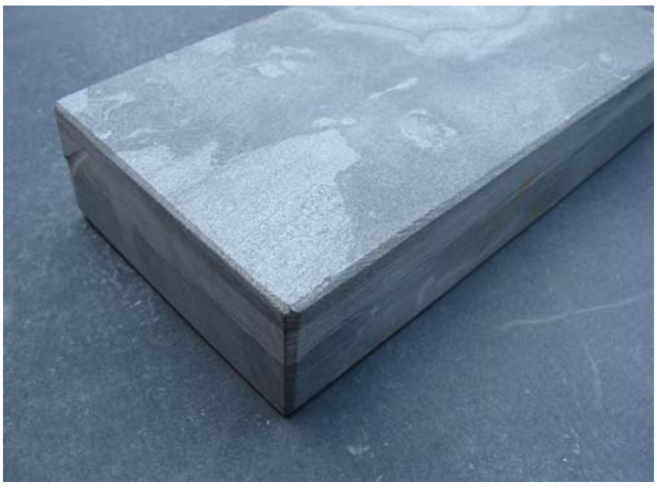




The stones are not sawn from the sandstone slabs but chopped with chisels. The dimension that occurs is dependent on the base material. Therefore the dimensions are quite variable. After all it is a sin to throw away good material. Since it is a natural product the grain of the sandstone varies a lot.







* The slate (bridlice) is found in Vitkov and processed in the studio of Jaroslav in Lhota u Vsetína to beautiful but soft stones. They give a smooth result with water and slurry.



* Marble (Mramor). A relatively soft stone for the very last burr. Many do not think it is an optimal stone, but it is not intended to be. It is difficult to find a good quality.

Scythe stones

There are 3 ways to edit scythe stones:

With a wooden mold they call OMA, the shape of the stone is marked.

* With a sharp hammer resembling a cutting hammer the rectangular stone "rázky" is molded.

This method is very laborious and there was often broken something.





* The stone together with the mold is clamped in a kind of wooden vise. With a kind of large nippers, with legs up to 40 cm, the stone is cut into shape.

This method was faster, friendlier to the material, but also physically much harder to do.
After cut into shape it was grinded in a sandstone bowl until the shape was perfect.

* After the introduction of the electricity it was easier to shape the stone on a large grinding stone. The bench stones are made now in the same way.

Addresses:
Mr. Jaroslav Suchácek Sr.: tel: +420 571 439 120 Lhota u Vsetína 255. 755 01 Lhota u Vsetin
Mr. Jaroslav Suchácek Jr.:
tel: +420 603 815 893
pracovní LUV Kamenne brousky, vábnicky, kriváky.
Lhota u Vsetína 77 755 01 CR.
Email: **Jsuchacek@atlas.cz**

In summer: **http://www.vmp.cz/cs/odborna-cinnost/tradicni-rukodelna-vyroba/nositele-tradice/jaroslav-suchacek-st.html**
Adres: Palackého 147, 756 61 Ro nov pod Radhoštem
Czech Republic. phone: (+420) 571 757 111
phone/fax: (+420) 571 654 494
e-mail: **muzeum(zavinác)vmp(tecka)cz**
homepage: **http://www.vmp.cz/en/**



The stones are also available through the site **http://www.cestadreva.cz/page/obchod/prirodni-brusne-kameny**
Merboltice 95, 405 02 CZ Merboltice.
(50.41.30N 14.20.44) E-mail: info@cestadreva.cz
Identification Number: 73743488 Císlo úctu: 827829001/5500

Jan Marek.
Jan is the core of the company. He provides training and instruction on grinding and honing and dealing with woodworking tools (srdce projektu, poradenství).
email: jan.marek@cestadreva.cz tel: 723 366 421

Zuzana Pekna.
Zuzanne does the site, handles the shipment of ordered products and the administration (webove stránky, obchod, administrativa). Merboltice 95, 405 02 CZ Merboltice
email: zuzana.pekna@cestadreva.cz tel: 737 633 901.

Since we had little information we just had a look there and found a very passionate duo. Despite the language problems, much information is exchanged and we have 'looted' his stones stock.


Jan Marek, Henk Bos, Ge Bos-Thoma en Zuzane Pekna



DU Germany

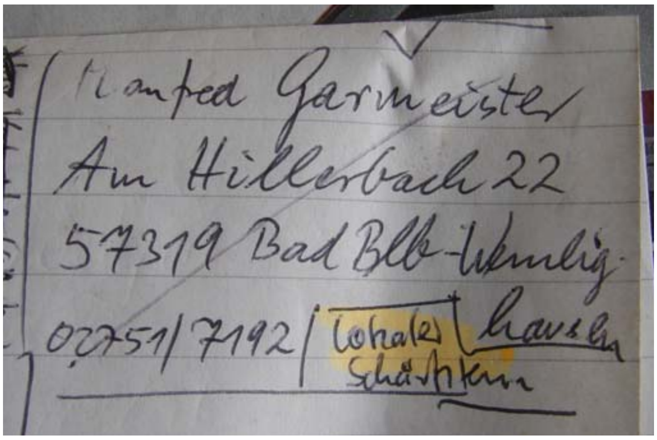

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Rodby
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Sassnitz
Rugen
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Kiel
Lubeck
Rostock
Travemunde
Cuxhaven
Hamburg
Nederland
Bremen
Wittenberge
Polen
Bentheim
Osnabruck
Hanover
Potsdam
Berlijn
Munster
Braunsweich
Frankfurt a d Oder
Holzminden Wesersandstein
Bielefeld
Detmold
Bad Pyrmont
Magdenburg
Oberhausen
Goslar
Dortmund
Bad Harzburg
Duisburg
Essen
Herdecke Rhursandstein
Dessau
SAUERLAND
Halle
Dusseldorf
Winterberg
Kassel
HARZ
Baumberg
Leipzich
Keulen
Meissen
Aken
Oberkirchen
Dresden
Eisenach
Bonn
Koningswinter
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Weimar
Belgie
Koblenz
TAUNUS
THURINGERWOUD
Geroldsgrun
Cochem
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Wiesbaden
Frankfurt a d Main
Rudesh im
Sonneberg
Lotharheil
Mainz
Luxemburg
Trier
Saarburg
Bayreuth
Tsjechië
HUNSRüCK
Wurzbrug
Mannheim
Saarbrucken
Heidelberg
Nurnberg
Karlsruhe
Spiegelberg
Pforzheim
BEIERSEWOUD
Regensburg
Frankrijk
Baden-Baden
Stuttgard
Nordlingen
Freudenstadt
ZWARTE WOUD
Passau
Ulm
Augsburg
Munchen
Freiburg
BEIERSE ALPEN
Tiltsee
Friedrichshaven
Ober Ammergau
Amargau
Konstanz
Lindau
Fussen
Berchtesgaden
Sonthofen
Garmisch-Partenkirchen
HB

DU Bad Berleburg Mystery stone

When visiting Johann Tremmel (Matzelsdorferweg 31, 93444 Bad Kötzting (Ambruck) or Exenbach 13, D-93471 Ambruck) Email: welcome@ashley.de phone 0049 (0) 9945-2207), we had received an unknown whetstone.



With the advice for information on this and local sharpening stones, to go to Manfred Garnmeister, Hill Am Bach 22, 57319, Bad Berleburg, Bad Wemlich.



In the Internet and phone book the man was not to be found so we went to have a look when we were in the neighborhood.

On Thursday, August 11, 2011 in Bad Berleburg at the tourist information we asked about the man we were looking for.

At the tourist information they did not knew him, but they could show us on the basis of a map where the adress was. On basis of the map we searched the address and found it. The house is being renovated and there is none.

We inquired with the neighbors across the street, there we heard that the man deceased about 2 years ago shortly after he retired. His wife died six months later, the house was sold and the new owner was busy renovating.
Nice neighbors, they were very helpful. When asked where the stone collection had gone to, and were we told that the couple had 2 sons and 1 daughter. One son lives somewhere in Bad Berleburg, the other in Soest and the daughter in Norway. There were no known addresses so they could help us no further.

We also visited:
* The Schaubergwerk in Bad Berleburg-Raumland.
We went there and found nothing.
* "Bohl" in Bad Berleburg-Raumland is a stone work.
The current administrator of the stone work knew his grandfather used to sharpen his knives on slate, but unfortunately, otherwise he knew nothing about it.
* Also in The Schiefergruben Magog Schmallenberg the answer is negative.

Is there anyone who knows more???



DU Germany Bentheim and Gildehaus sandstone



HB

Slide Stone in the open air museum of Munster

In the Netherlands the term 'Bentheim sandstone" is generally known. This is because there is a lot of material to be found in the Netherlands. In churches it is present in the form of altar tables, portals and fonts.



JB

In many buildings in the area it is to be found.
The Royal Palace in Amsterdam is built in Bentheim sandstone. Besides these applications, there were used a lot of grinding wheels with a tray underneath on farms by artisan craftsmen. The sandstone itself was perfect for grinding. The bond between the grains is just right, and when the grains become dull, they break off and are replaced by new ones.

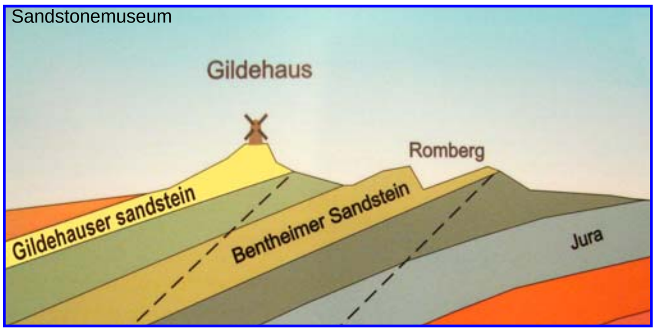


JB

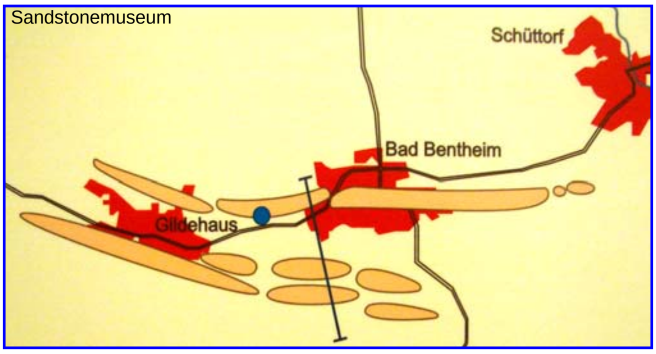
Sandstone ridge

In the Lower Cretaceous Period "Valanginien" (125 million years ago), large parts of Lower Saxony were covered by the sea. In the area of the County of Bentheim, the sea was shallow as it was close to the coastline. The erosion sand from the mountains was led by the rivers, and by the decrease of the flow the sand grains dropped down.

Sandstonemuseum



Clay layers therein were covered with it and it formed sand banks.
In the time of the Upper Cretaceous (70-90 million years ago), they were lifted by tectonic forces and thereby distorted.
By this movement crevices arose in the rock.
After this event, there came a time in which the upper rock weathered while the tougher parts remained.
The layers of stone at the Funkenstiege are at an angle of 22 to 25 degrees and at the Isterberg at an angle of 6 degrees.



The Bentheim sand ridge has a maximum thickness of 60 to 70 meters and is in east-west direction approximately 9 km long. The sandstone comes to the surface in the east and west of Bad Bentheim. In the last 800 years there were numerous quarries. At the peak of production and trade in 1600, there were nine quarries in operation.



Now there is only one left in Gildehaus where the firm Monser from Nordhorn quarries each year about 300 to 400m³.



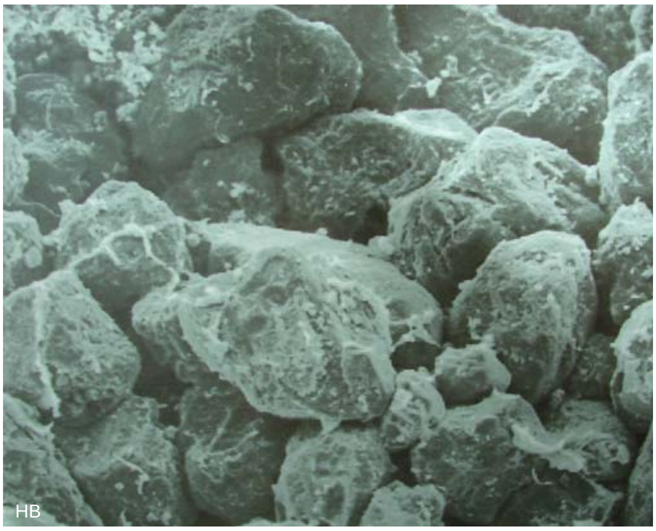
There is a small quarry at the open air theater in Bentheim, where sometimes for restoration work still material is quarried. The quartz sandstone is uniform in grain, has high strength, good weathering resistance and is easy to work. (Use only with water!) Because of its high porosity, it can contain much water and is used as a stock room used for the water plant. The maximum altitude is reached in Bad Bentheim, namely 90 meters.



At the highest point is the castle Bentheim that was named already in 1050 as "Binithem".

The binding (matrix)

There are 3 systems detectable in the binding. It is the combination that determine the final result.



* Due to high pressure, of the grains "flow" on the pressure points into each other;

* Remnants of plants form silicic acid which gets like a gel between the grains and dries there causing a hard bond;
* Remnants of shells cause calcium carbonate which forms a softer bond. Calcium carbonate is the most naturally occurring bio-mineral.

The crystalization of this takes place under the influence of biomolecules. That are organic molecules that bind to calcium carbonate, after which in the end there is created a fixed schedule. However, that does not happen in a short time.

Two color variations



The sandstone originally was almost pure white. Traces of iron colors the stone more or less red. The Gildehauser stone is yellowish / orange / white to gray / white and the Bentheim is much redder. Very special is the occurrence of Liesegang rings that cause brown lines.

Gildehaus sandstone



The Gildehaus sandstone is younger than the Bentheimer and originated in the Hauterivien period. Unlike the Bentheim sandstone, the Gildehaus sandstone rich in fossils.

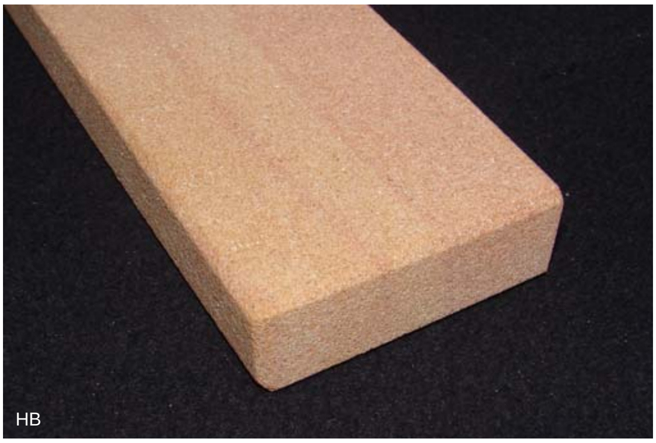
The stone is quarried in the "Fürstliche Steinbruch Romberg" in Gildehaus. When the sun shines on it, it often has a beautiful golden color. Therefore it is also called Gildehaus Gold. Another explanation for the name is: in the 17th and 18th century it was the main source of income for the Counts of Bentheim and therefore just as valuable as gold. The density is 2120 kg / m³.

The water absorption is about 7.1% by weight.

The frictional resistance is 16.4 cm ³ / 50 cm ². The address of the company: "Monser NATURSTEINWERK GmbH" Almelo Strasse 3, 48529 Nordhorn 80830 495921.

www.monser.de Monser-Nordhorn@t-online.de

Bentheim sandstone



The Bentheim sandstone is tan and / or redder than the Gildehauser and exhibits more flamed colors. It is also harder than the Gildehaus stone. Bentheim sandstone is a pure and relatively solid sandstone with a uniform structure, which is suitable for many purposes.

The stone has a yellowish gray to white base consisting of quartz grains with a medium coarse grain. By oxidation of ferrous components reddish stripes may be present.



Rest piece of Bentheim stone at the firm Monser. A piece of 50 cm was chopped off to make test stones of it.

The stone is homogeneous in texture, color and quality. The stone has initially a light tan color, which later becomes increasingly darker by weathering.

The stone is used for sculpture, restoration such as pinnacles, dripstones , covers, skirting boards, fascia boards, columns and the like. Bentheim sandstone patinates dark to black on the rainy side.
Density: 2,400 kg / m³. The water intake is up about 1.7% vol. The stone is becoming rare.


JB

One of the oldest sandstone sculptures is the Herrgott of Bentheim. This is a 2.45 meter high, freestanding sculpture, depicting the crucified Jesus. Around 1000 AD it was carved from a block of sandstone and is today in the courtyard of Bentheim Castle. In the museum on the island of Schokland are still sarcophagi from the same era!


HB

One of the old Bentheim quarries is changed into an open air theatre. To me it seems a particularly beautiful romantic decor in spring with the light green color of the birches with the tan colored sandstone. There was sandstone quarried and processed until the 1950 ies.

Bentheim Castle - stone rich


JB

The history of Bentheim can be traced back historically to 1050. Then the place name “Bentheim” first was mentioned. At Bentheim Castle Romanesque elements are visible, which points to the early Middle Ages.


JB

The castle is build of countless chunks Bentheim sandstone, quarried in the area.
Bentheim stones in earlier centuries mainly were exported to the Netherlands and were used there in a large number of monuments. The quarries belonged to the lord of the castle and the masons had to pay their mineral rights in sandstone blocks that were used for the construction of the castle.


JB



Geological open air museum Bornhalm
The Geological Freilichtmuseum is located in Gildehaus, close to the only still active quarry in the county of Bentheim. Along a ring road of 200 meters in length, the visitor can view more than 50 exhibit objects and 16 different types of rocks.
This open air museum tells how species of stone arise and many examples of types of stone can be seen. Central to this course are the Gildehaus and Bad Bentheim sandstone.
Address: Am Romberg, 48455 Bad Bentheim / Gildehaus
Coordinates: 52 ° 18'11 "N 7 ° 6'3" E

Sand stone Museum
The sand stone museum is all about the Bentheimer gold. The museum is located in the historic Ackerbürgerhaus at the foot of the castle. There is 180 m² of surface where the history, geology and trade are shown. Many artists show their work. Also very large sculptures!

In January it is closed. From November to March it is open from 14 to 17 hours and in the summer an hour longer. You can find the museum in the Funkenstiege 5 in Bad Bentheim. This is near a large parking lot.
www.sandsteinmuseumbadbentheim.de
webmaster@sandsteinmuseumbadbentheim.de

Kuhlkerl
In the area south of the castle called Herrenberg was an old quarry that is filled in partly with stone waste.
The sculpture "Kuhlkerl" was established to commenorate the workers of the Bentheim sandstone Kuhle.

The text beneath the scupture reads: *The Bentheim Sandstone was a wellthought building material of the County, in Westphalia and in the Netherlands.*
The Sculpture "Kuhlkerl" should remind of the workers, who quarried the Bentheim sandstone in the "Kuhlen".



Du Duitsland Spiegelberg Wetzsteinstollen



Spiegelberg is situated on the river Lauter in the natural environment of the Swabian-Franconian Forest. The Lauter is a tributary of the Murr in Baden-Wurttemberg. It is about 15 km long and runs entirely in the sparsely populated forest area of the Löwenstein Mountains. It springs in the district of Heilbronn and ends in the Rems-Murr. The name Lauter stands for clear water.
To distinguish it from many other rivers of the same name they called it Spiegelberger Lauter. The name Lauter occurs in many river and place names such Altlautern, Neulautern and Kaiserslautern.

In the past around the Lauterdal several quarries and mines have been in operation. In Eisenlautern, north of Spiegelberg still can be seen an abandoned quarry.
The Stuben Sandstone has long been important for the extraction of sand.



Jux Wetzsteinstollen at Spiegelberg

In the area around Jux (now a part of the community of Spiegelberg), there were many such small quarries. Already in the 16th century, sandstone was won around Spiegelberg in various sandstone quarry's. Normal sandstone was used to help build houses there. Sometimes there are found layers of very hard silicic acid sandstone in the vicinity of Jux. The inch thick, very fine and hard stones where, incorporated into domestic labor, whetsones were made, that could be sold with good merit. Early on, the quarry in the municipality Jux exhausted. To be able still to make whetstones it was decided in 1881 to start a mine and to dig into the mountain.

Thus was born the only whetstone mine in Germany. In the 19th century from the Wetzsteinstollen near Jux, to 100,000 whetstones that had a wide application, were won annually under the name Juxer whetstone. The quarry was closed in 1911 by blowing the entrance.

Bergbaulehrpad
Since 2001, members of the historical society are working to restore the honestone mine Jux so far that it can be visited by the public.
In the context of a children's program, there is plotted a 5km long route what could serve as "Bergbaulehrpfad". It shows various activities of before the industrial period in the Swabian forest.



With the planned interactive museum, they want to show as highlight of the route, this rare whetstone mine in Europe.

Opening times and tours
Guided tours with an expert guide with lots of info. On the opening day usually from 12:45 to about 13:45 and from 14:00 to about 15:00.

Cost: A donation for the Tourist Association Spiegelberg eV.
Special tours: by appointment for groups and school classes.
Appointments and the correct dates you may ask Manfred Schaible, Phone: 07194 - 8422
Email: m.schaible-spi @ t-online.de



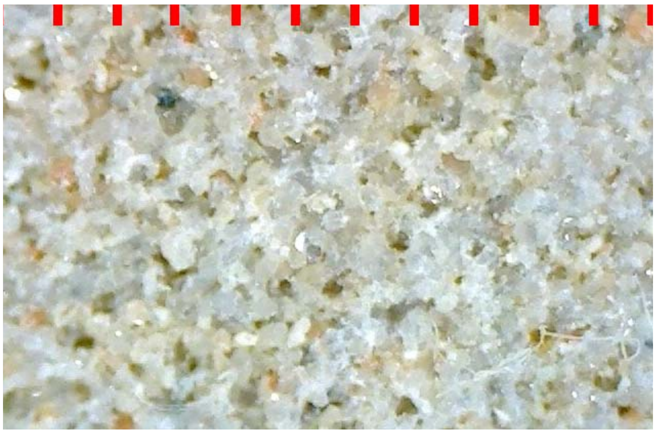




Spiegelberg is on the "Idyllischen Straße". The idyllic route existes since 1967 and is a 130 km long tourist route, in the Swabian-Franconian Forest. The route name is derived from the character of the landscape and leads in a natural way through a landscape with a relatively low population density. It is characterized by signs with a white bird on a green background.







The scale is 0.5 mm. The stone is a 100% better than expected. The binding is firm and the relatively large and round grains will fall well and provide a smooth cut.

We knew where about the mine had to be, so we tried to find it. After some searching, we indeed were successful, but obviously it was closed. We poked around a bit and took a fine-grained, hard sandstone to take home. We wanted to cut it at home and turn it into a test stone.

www.wetzsteinstollen.de

GB Great Brittain



England, Charnley Forest Hone (CF)

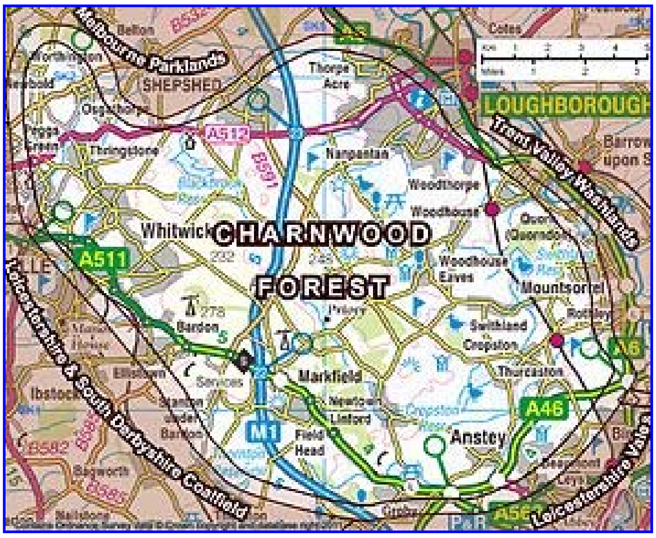


Introduction
The special very hard CF stones are from the area of Charnwood Forest in Leicestershire.

Some CFs can provide a very sharp edge. They can be used for grinding or polishing of a cut with a light oil, but preferably with water. Many of these ancient stones are available 2nd hand in a specially made wooden box, which is saturated with oil. Also, the stone very frequently has a pretty thick layer of dirt. They are quite hard to plane - even a little of smoothing can often cost several hours.

The best Charnley Forest Stone, as some have indicated, is from the Whittle Hill Quarry, the other stones from nearby exhibit sharper or hard spots.
Charnley Forest whetstone is one of the best alternatives for the Turkish oil stone, and very sought after by carpenters and others, to give a cut to different tools, pocket knives and the best stones are suitable for straight razors.

The area



Charnwood Forest, as defined by Natural England

Charnwood Forest is an area in the north west of Leicestershire, England, between Leicester, Loughborough and Coalville. The ancient parish was called Charnley. The area is hilly, rocky and picturesque, with barren regions. There are also some extensive tracts of forest, the height is usually 600 feet (180 m) and higher, the higher area is about 6.100 "acres" (25 km2). The highest point, Bardon Hill, is 912 feet (278 m). On the west side is an abandoned coal mine area, with Coalville and other former mining towns, that region is now replanted as part of the National Forest.



The M1 motorway, between junction 22 and 23, goes straight through the Charnwood Forest, there is a lot of CF stone processed into gravel. More on this later.

The structure of the Charnley Forest area is very different. This is because in the area layers were deposited, disrupted and broken or eroded away, then covered with other layers where both sedimentary and volcanic rocks were formed. Volcanic activity erupted pieces of deeper-lying layers and spread it over the area, this is varied from pellets having a length of up to 20 inches (volcanic "bombs") up to the finest dust conceivable.

This lay where it fell or was moved by wind and rain to other locations.

In Charnwood Forest are examples of Charnian volcanic rock, volcanic breccia, andesite, mudstone, siltstone, etc. The siltstone beds are gray-green and are laminated with mudstone in other areas. The area was once a desert, later flooded by the sea, then dry again and again flooded, then covered by glacial fields.

The quarries reflect the varied results - at Great Pit slate was mined; Brand was close to Great Pit; Morley quarry was very different: "charnian" rock, "statified" mudstone, siltstone and sandstone; Hill Hole Quarry and Groby quarry for "markfieldite" plus others. Most were not suitable for whetstones.



The Whittle Hills are composed of a compact greenish grey flinty slate, of a very close and smooth texture, split up near the surface by a vast number of fine joints into small pieces forming rude prisms.



This rock is extracted in small shallow excavations, the pieces are shaped and polished and converted into hones, or whittles, as they are locally called. Hence the name of the hills.

A very considerable trade is carried on by the few cottagers in the neighborhood, most of the fine hones used in the Midland Counties at least, if not elsewhere, being derived from this spot. The beds of the Whittle Hills dip nearly north-east, at about forty-five degrees.



In the rocks at the summit of Beacon Hill the several characters of the slate are well expressed.
The stripe is clear, and the surfaces of the beds are often exhibited, and are strictly parallel to it.
They dip twenty degrees north of east, at an angle of forty degrees. The cleavage is perpendicular to the horizon, and strikes twenty degrees south of east.

Several old Journals of Archaeological Science mention the grey-green hone stones. Page and Griswold both mention the "Charley Forest Oil Stone" (at first I thought 'Charley' was a misprint, but the author of a 1978 tract persists in calling it Charley). That author, D. Moore under the heading "Leicestershire Oilstone" refers to it as "...a very fine grained pale grey stone containing quartz, muscovite and opaque material. It was obtained from the Whittle Hill Company's quarry, Charnwood Forest, Leicestershire..." There is mention of non-figured grey hones in other works, too.

Varieties
There are a few varieties of the Charnley Forest whetstones. Some stones are muddy gray-green and others indicates the colour of a bleak and foggy day at sea with a little green in the deep.



The oldest rocks exhibit a light khaki color light green with small red and black spots.



The old stones are recognizable by their irregular shape and are usually somewhat rounded at the bottom. This is because they were moulded by a driver blade. These stones are relatively soft and grind significantly better than the younger rocks. These are more rectangular in shape and much darker in colour and harder in texture.



There can be distinguished five different types. Anyone is searching for that olive green stone with red / purple / brown stripes. But even they vary in quality (grit and bond) and they often do not have to be the best CF's. Some of them have a single layer / direction of inclusions and some have several. Usually you will notice this before and after the wetting of the stone.



* Green with black dots or lines (there is one on the SRP Wiki).
* Bright olive green.
* Green with 1 layer. Dry you only see one direction of the stripes, but when it gets wet you can see that there is another layer appearing with a direction of the stripes.
* Green with more layers.
* Green / Blue.

Most stones are the green / red variety, often with beautiful markings and swirls. These should be examined very carefully, because most of the defects associated with this whetstone are in the dark markings, they are often harder inclusions that can damage the cutting edge of the razor unless they are taken out.
They vary in the grinding result - old manuals say that this type is slightly worse and coarser than the plain type, but the best examples of both are very evenly matched. Some stones are solid moss green and the darker version is an excellent whetstone to finish - the old manuals assess this type as the best. Both types can be used with a small rub stone from the same material to accelerate the grinding, which is quite slow. Due to the slurry a dull cutting edge results. Make the last strokes with plain water, which then ensures a polished edge.

Manufacturing the whetstones
Given the small area where the stones come from, it is surprising that so many variations excist. In the literature we find names like "Charley Forest Hones" or "Charley Forest Whetstones", "Leicestershire Oilstone", "Charley hone", "Cutlers oilstone" and "Chorley stone".

Generally the making of the Char (n) ey Forest whetstones (at least in Cole Orton) seems to have been the work of 1 man or no more than 1 family; the work was carried out inside a house or in a small outbuilding against it.
The whetstone makers seem usually to have visited the quarry in person, to choose for themselves suitable pieces of stone, remove them with a pony cart, or if there was needed a small amount, as much as a man easily could carry home, on his back over the Charnwood hills.

The whetstone makers usually carried out their work in the winter months, the summer was devoted to the hawking of their wares around the workshops of Coventry, Birmingham and other industrial cities. Each hawker seems to have had his own round of contacts and repeated this year after year, his visit was looked out for by the people who needed his wares.

There was one who worked mainly with Thringston stone, who had many years of good trade with the file cutters and other skilled craftsmen in Sheffield.

There are some funny laws and England. It is not allowed to pick up a stone for example to take it and put it in your garden. Also, you are not allowed to pick a flower in the wild to give to your love!

Safety and Awareness
* Charnwood Forest is a Site of Special Scientific Interest (SSSI) and is protected by law.
* It has recently been officially defined, by the Natural England National Character Area (NCA) process, which takes a somewhat wider definition than many previous attempts to define the area.
* Do not disturb the flora and fauna.
* Enter the quarries with care and do not approach the quarry faces unless you are wearing a safety helmet.
* Collect only one or to small examples from loose material on the quarry floor.
* Do not use a hammer on the quarry face and do not damage the dry stone walls.
* Please keep detailed records of each stone, stating where it came from with photographs and drawings.

Quarry's
There are two well-known quarries in the literature: a small quarry in Thringston Village and Whittle Hill. The Thringston stone had a very good reputation while the best stones come from the neighborhood of Cole Orton. The latter was very difficult to win but was very much appreciated by the hone makers.
The Village Thringston quarry unfortunately is now not to be found.



Thringston quarry
Whittle Hill perhaps not ultimately has been the source of the best Charnley Forest whetstones.

There is an article describing how the whetstones used to be a domestic industry in the area of Cole Orton, and according to those who worked there Charnwood Hones from a quarry near the village of Thringstone were superior to all others. However, the material was apparently difficult to win and that is why this particular stone was never widely appreciated.

Initially CFs stood in high regard, were eventually considered subordinate to Turkish and Washita stones, mainly because of their low cutting speed. This loss of value coincides with the increasing availability of an inferior kind Charnley Stone, replacing the Whittle Hill whetstones on the whetstonemarket.

Wittle Hill quarry



The Whittle Hill Quarry, Charnley Forest, Leicestershire, SK 497 158 was the first quarry for the stone and was operated until the early years of the twentieth century.
An article in Loughborough Telegraph of April 12, 1837, announced that the Whittle quarry was opened.
It is clear that the Charnley whetstones was known long before that time and the use goes back to before 1800 as far as we know.
Warren mentions in a report in 1800 that ".. at Gate House Hill now, called Whittle Warre's, the Royalty of Beau Manor in this forest ... are quantities of the most excellent stones."
During the 1880's the output of the mine reportedly approximate 20 tons, and George Hodson is listed as the owner of "Whittle Hill Quarries whetstone" around 1900.

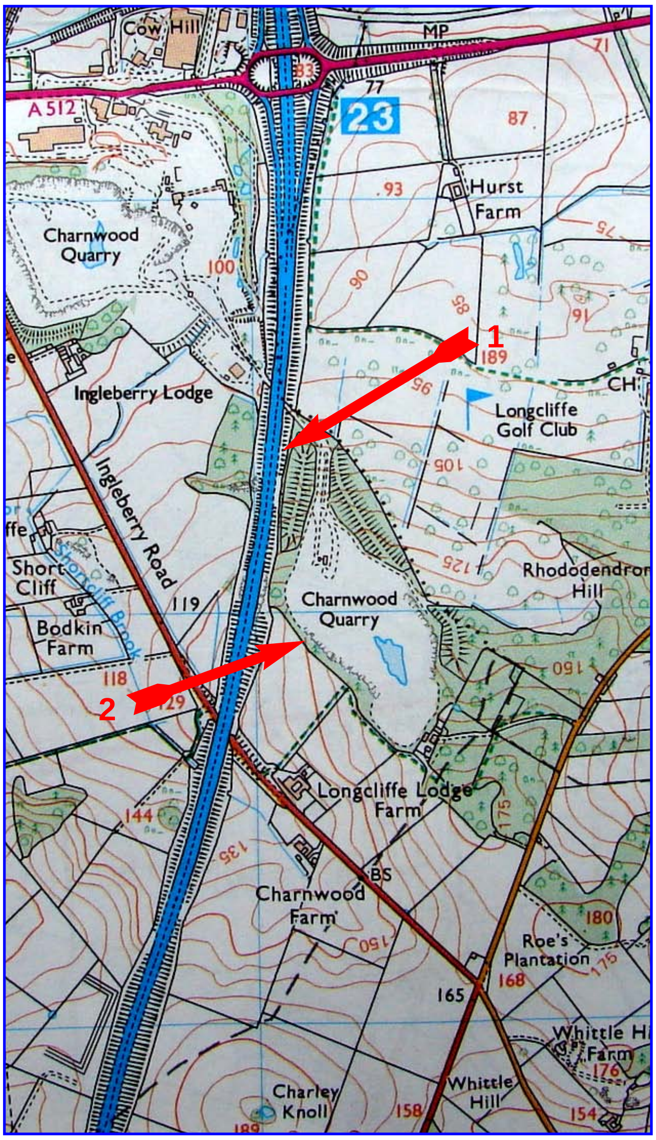
Some sources indicate that this quarry closed in the early years of the 20th century (1912). Certainly the Rolls Razor company in 1930 sold a set containing a piece Wittle Hill whetstone.
This is accompanied by an oral tradition in the Derby area about someone walking the 15 or so miles from Charnwood Forest, Charley stones from a handcart around the workshops of the area at that time.

Whittle's Hill Farm is located about 1.5 miles south of Loughborough, on the way to Charley and Copt Oak.
The quarry was owned by Mrs. [Sophia] William Perry Herrick of Beau Manor Park, but later for several years leased to Mr George Hodson, CE, of Loughborough, who installed steam machines so the cutting and shaping of the stones got much better and faster than with the methods used by the ancient workmen.

The stones underwent five different processes during their production, and were finished as carpenter’s stone, gouge sharpening stone, knife and razor stones and circular discs, and the quality is so remarkable that they can be found on carpenters' banks around the world .. .

An excerpt from our travelogue of Saturday, May 19, 2012
Exactly at 12 o'clock we stood at Stepans door. We quickly made a sandwich and packed something to eat and drink on the way, then by Stepans car to the M1.

(1) On the highway Stepan simulated a fault in the car to give us the opportunity to see the highway cut through the Charnley Forest stone. Quickly made a few photographs and back in the car. Fortunately no one has noticed, despite the many cameras that are placed there on the road.





Visit Whittle Hill Quarry



In advance Stepan asked via email permission to visit the quarry wich he got permission. The former quarry is on private territory and its location is shielded.



The house and barn were built of whetstones.
The stones are worth more than the house and the barn!

Unfortunately the owner was not home when we rang the bell, we headed for the quarry.
We were just on the edge when Stepan heard the car of the owner, he's just walked around and came back with a grin.

It was okay that we walked around, we could take as many stones as we liked. So the police cannot say anything about it, we had permission from the owner.



We have combed just about the entire pit, a large wilderness with mainly peat.



Stepan with a nice piece of CF.

Stepan had previously warned that it could be slippery, and so it was, steep too.



We had no difficulties, except a slight disagrement with some brambles.
When we wanted to go Stepan rang again, but the owner was already gone again. We have thanked the wife of the owner and went to the side of the M1, there was a large quarry (2).

Charnwood quarry



We therefore had to struggle through a meadow (with high wet grass) on a Public Footpath. Then a long slippery descending path to the quarry.



This indeed appeared to be immense, deep and impressive in size.
We also walked around for a while there, Stepan and Henk looking for rocks and I had the care of our backpacks.



There was a wall of 35 meters of CF whetstone material. The material is processed into gravel for road construction! When the men came back I could surprise them with muffins (just bought this morning - Stepan had not eaten lunch, we only 1 slice) and hot tea.





That was nice because our feet were all wet and we started to become cold. Then back again, we were happy to find a shorter route to reach the road again.

This day fortunately we could use the good and friendly relations that Stepan has with the owner.
To exclude all the risks of an accident to the English it is much easier to say NO than accepting the risks of accidents in their area.

Conclusion
It is too much trouble to make a Charnley Forest whetstone yourself! They are locally in second hand tool shops on sale for 15 to 20 pounds.

GB Moughton Whetstone



Also of these stones it is said that were popular to hone scissors and cut-throat razors amoungh others, for the Sheffield razor industry.
The Moughton whetstone is identified by the concentric rings in red / purple and green.

The rock
The curiously striped stone has led to various geological theories, none of which is generally accepted.
The stone dates from the Silurian period (443-416 million years ago). It is present in a thin layer in the rock.



The stripes are not always present but formed in the rock from the outside to the inside.



The Moughton whetstone is nothing more than an oxidized siltstone / sandstone and it is considered likely that the rhythmic and concentric stripes are a result of post-lithification / oxidation (the purple color is ferrite-iron), possibly formed by the Liesegang processes.
Because of these stripes it is an excellent whetstone with the correct grain for grinding metal.
The stone is hard. So hard that it takes effort to flatten.
The slurry is light brown and smells like mud.
On the grain size the opinions are rather divided.
It ranges from 6K (King) up to 8K to 9K so that the stone belongs in the finisher category.

The reference of the quarry
SD784718 Postcode LA2 8DJ. We parked at the station of Riblesdale and with Henk's whole geology equipment in his backpack we went on the trail, into the hills. To our untrained legs it was quite difficult, the path was quite up and down, through grassland and a part which was filled with rocks and loose stones lying around in all possible sizes. Moreover, the environment is very bare, the wind was only occasionally broken by a stone wall, separating the different fields of grassland. At one point when we were dabbled up 1.5 miles we briefly rested in the lee of a wall and had a drink.





This map was the route we followed from the station to the Riblesdale Moughton Whetstone Hole.









Then on again, through a piece of bog; without problems after about 3 miles we found the old quarry.



There were still the remains of a hut that was built there. Henk looked at stones, I had a rest in the lee of the ruin. Henk slipped in the mud near the stream that springs there; his pants were covered with mud - but that did not spoil the fun.



It started to rain a little, so we put on the rain jackets and we lugged back. The bottom of the old quarry is huge, we discovered.
It was quite a task to dabble back. We had to stop to rest a couple of times. Still the way back seemed shorter despite the rain. It also helped that the wind did not blew into our faces.
At 2:30 we were back at the car, took of the rainclothes, and how delicious: a fresh cup of coffee. The car seemed warm and deliciously dry. Outside it was 9º C., inside the car a lot warmer. The rain slowly stopped, after half an hour the sun even shone again.



The Whetstone Hole is a spring, where the stones can be found. It is above Austwick in the Yorkshire Dales. In the literature, the area is shown as Crummack Dale of Ribblesdale, but the area where stones were mined for commercial use is unclear. The stream and its bed is located at the foot of Moughton Scar (SD784719). The stones are found in the stream. The stones on the surface are weathered. Above this spring is another spring that is a little hard to see.

Another route
Take Townhead Lane from the village of Austwick and park at the first intersection (Thwaite Lane SD769692).
The walk is 4 km or 2.5 miles along bridleways.
Look carefully whether it is allowed to park at SD771706 for there is a fairly new parking ban.

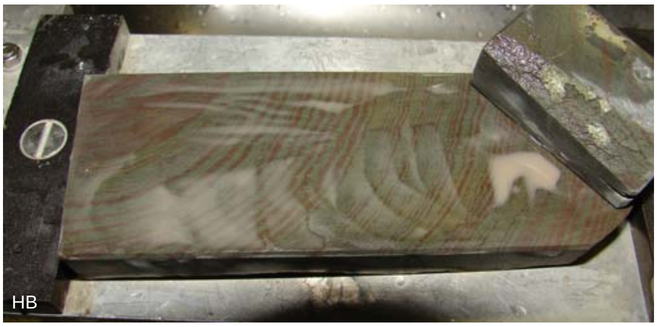
It's a great view down into Crummack Dale, especially in spring with a shimmering Moughton Whetstone Hole.
Continue along the grass path along the cliff and the road that comes from Wharfe, leaving the walled cliff of Moughton Lane to climb the plateau.
This being the route Wainwright proposed, it is likely to meet other hikers.



To feel good and to gain insight into the quality of the stone, there are several test stones needed. Luckily we were able to use some pieces of a collector so we had enough material for our test procedure. The large stones are cut into bench stones, and of the smaller only the surface was polished mechanically.



The stones are put in water before flattening for a quarter and then ground flat on a CiC 240 with water. It is notetable that the stones are quite hard.
The resulting slurry is brownish red in color and has a mud smell.



For the grinding test, a slurry is made witch a Moughton slurry stone. This required a lot of energy and produced only a little slurry.

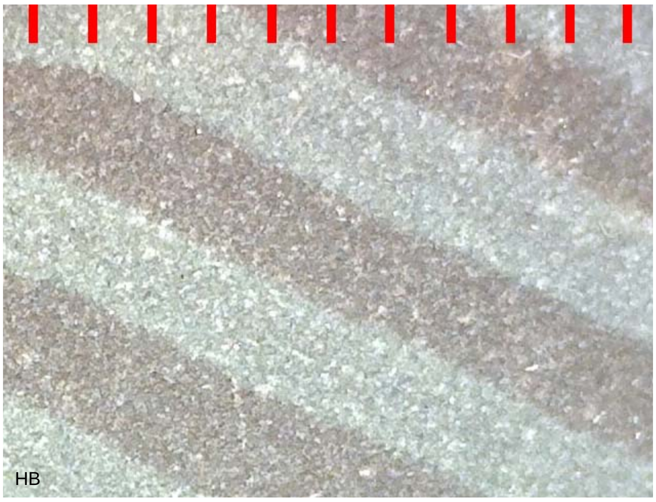


The benefit of the exercise is a quick sharpening stone, coloring black from the steel. You feel that the stone takes off considerably.
The fine grain gives a good result which compares well with the Belgian Blue Coticule.

It was noticed that these stones were very porous. This is not a problem during grinding. Often add some water with a finger. After use, the stones dry very quickly.
At first I thought this is a very hard stone but I recommend not too much pressure to prevent deep grooves. It turns out that the grinding stone, even after many uses, still remains flat.

One thing we noticed is, there is a difference in hardness between the red and the green parts, with no visible or tangible clue. The fineness of the red stripes was not exactly to determine.

The whetstone is quite hard, but nowhere as hard as a Charnley Forest or similar novaculite-type stones.
The Moughton whetstones are at their best when they are used to smoother a sharp cut. They are excellent after using a synthetic fine stone. She acts slowly, but even with a slurry they will not degrade into the 12k to 30k range.
I believe that the slowness is in the low pressure which must be exerted during honing. Strangely enough, I think the stone is more effective on harder steel, which is strange when you consider that in early 1800 the stones were used for the Sheffield razor sharpening to give their last finish.



All in all, I am very pleased with the stones and the way in which they perform. It's a bit of searching to find the right way but one of the stones is now part of my travel kit.
Some people will be put off by the slow cutting speed, but with a suspension it is effective and not much slower than a Chinese 12k whetstone used with water.



There are also Moughton stones without the characteristic bands.

Number of test stones: 16

Binding of hardness: 1000 to 1500 grams
Average: 1132 gram

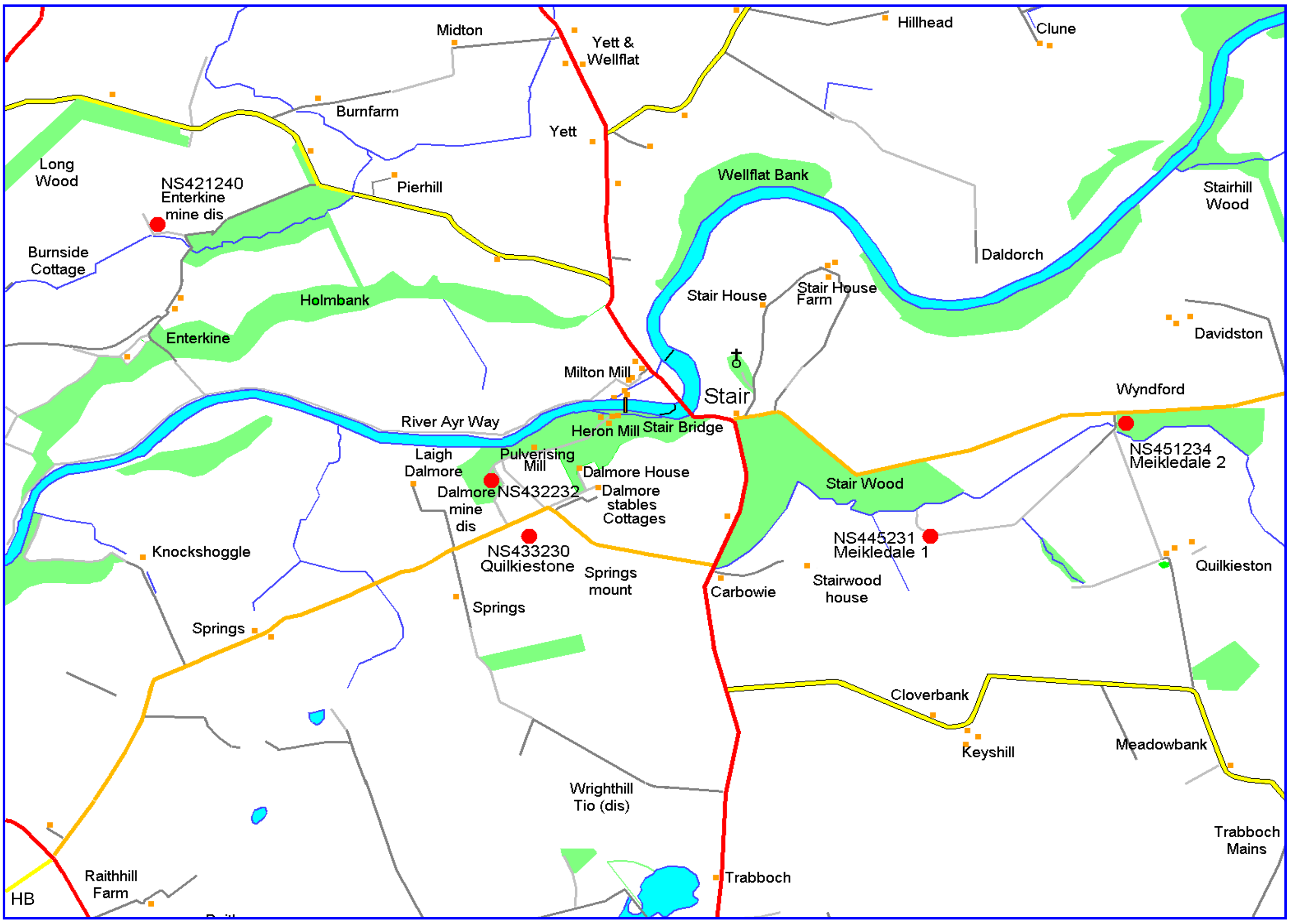
Density of: 2.58 to 2.8 Average: 2.76

GB Schotland



GB Water of Ayr en Tam O' Shanter Hone Works

Thanks to Kenneth Montgomerie, owner Water of Ayr and Tam O 'Shanter Hone Works at Stair



Water of Ayr and Tam O 'Shanter Hone Works at Stair where long time the main whetstone supplier in Britain and for some periods the only whetstone mine and whetstone manufacturer. Stair is located about six miles east of Ayr in Scotland. It was still worked in 2003 and through E-bay on the Internet the product is still for sale.
Water of Ayr stones were already in the time of the storming of the Bastille (July 14, 1789) picked up from the river Ayr in Scotland. In 1789 a firm was founded and in 1793 the stones from the banks of the River Air, were known as the "Water or Air Stone" and exported to different parts of Europe and America. Most stones come from near Dalmore (NS432232) which lies in the parish of Stair.
The history of the Honeworks includes about 224 years.

The last hundred years the Montgomerie family is the owner. For a long time, only water was used to power the works, then there was worked with steam in the mine and later still the power from the mains became the source.
Initially, the stone was mined from a quarry, but the last century of its existence, the stones were mined from a mine. This small and little known, but important industrial enterprise is the main topic of this article.
Unfortunately in these specifications we can be not complete. It would becme unmanageable large ...
Not much is known about the whetstone industry in Britain. In the beginning of the 20th century, and later the emerging widespread use of carborundum and emery, obscures the fact that natural stone is still used for finer grinding and polishing of amoung other, razors.

Carborundum or silicon carbide, is produced artificially in the form of small crystals very high in hardness, artificially bound to become hard and wear resistant grinding stones. It is more economical for most purposes than natural stone and has now largely superseded it. Silicon carbide is used for non-ferrous applications and for most hand-grinding stones.
In addition to silicon carbide at present artificial powdered corundum (aluminum oxide) with a binding, is used for grinding purposes. This used to be material impure and contaminated with iron oxide.
Natural Emery is replaced by artificially in electric arc furnaces created alumina, which in industry is used for grinding all ferrous materials. They are the most popular sharpening stones, they are hard but not so hard as silicon carbide.

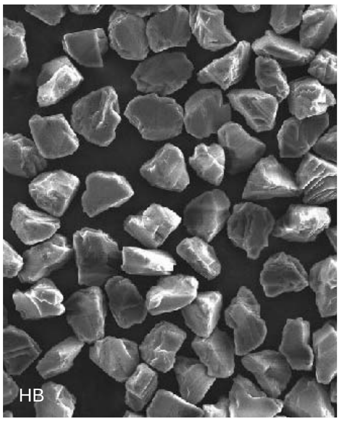
For the optimum sharpening of knives, surgical instruments and for fine smoothing of metal, such as engraving plates and moving parts of guns, the softer and smoother natural stone is still mined and processed into grinding stones of different size and shape. The demand comes from all over the world.



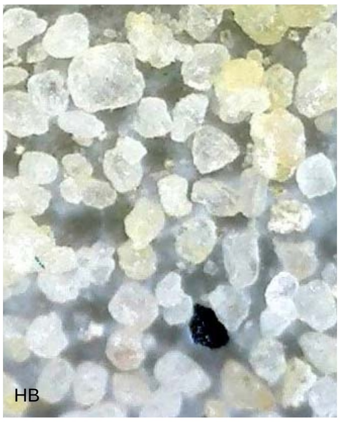
Silicon carbide



Aluminum oxide



Synthetic diamond



Natural stone with quartz

This is due to the shape of the grain. Carborundum and alumina are artificially broken which means that sharp grains occur. This also applies to diamond! The very small grains of, for example, 0.5 micron still cause grooves in the surface. Natural grinding whetstones exhibit a more rounded shape creating a smoother surface which mainly for razors arises a pleasant effect.



A good example is Coticule. Just as with the surface of a soccer ball the garnet grains are divided in facets (Rhombendodekaeder). It is the roundness with small points and excellent hardness that makes the stone so suitable as a whetstone. See Part 2 page 13.

For good natural whetstones very high prices are paid!
The use of natural stone for grinding and polishing must be as old as the use of tools and weapons with a sharp edge.

The selection and design of stone, which was particularly suitable for specialized applications, was common and led to a significant trade, because good sources were not so numerous.

Although detailed reports on the use of abrasive and whetstones are rare, there is a trade where they were important and well described - namely making leather and working it up. The tanners knife, with which the surface of the skin is processed, must be carefully sharpened and this happens or happened in three phases:

1. The bevel of the blade is very precise shapened to a 'grinding stone', usually made of sandstone, this laeves a fine 'thread' on the side with fine scratches on the steel. We call this grinding "bevelsetting".

2. The burr or thread is as far as possible removed and the scratches are completely removed through a "hone" with a very fine grain. We call these "honing".

3. The cut is optimized with an even finer stone and the burr is removed completely. We call this "finishing or polishing".

For Phase 3 a Scottish or Welsh stone was used.
The stones from Wales were criticized because of the tendency to irregularity and high hardness.
The Scottish stone is the Water-of-Ayr.
The American stone was recommended because of the uniformity of the structure and its low price.

Of the Water-of-Ayr stone is said:
"*The Water-of-Ayr stone is a rectangle whose corners are removed. It is an excellent stone to hone, with a good grip on the steel, and will give a very sharp edge. However, a serious disadvantage is its tendency to splitting, especially in view of the high price*".

The in about the 1830s known whetstones were first listed and described by Knight, who donated a collection of samples to the Society of Arts, together with a descriptive catalog in 1836.
Unfortunately, the Society's collection is not preserved, but the very useful catalog is published for about a century formed the basis of most encyclopedia articles published and for about grinding and honing.

History of the Water of Ayr Stone, the factory and the company.
The Water of Ayr stones are listed in 1793 in the Statistical Report of Scotland. The mentioning of the large output suggests that it had been avelable a long time, it could hardly have been so wel known in only three or four years.

However, the current company always claimed that his quarry, ie Dalmore quarry, begun in 1789.
The explanation is probably that the stone was originally found in the bed of the River Ayr (Water of Ayr).

The quarry was leased to the Smith family of Mauchline, who made decorated woodwork later, such as snuff boxes, "beautifully put together and lackered and highly appreciated everywhere. This company delivered boxes of high quality, often with decoration, for “whetstones”.

At some point before 1815 William Heron came into possession of the Dalmore estate and he evicted the Smiths in 1815 from the quarry and began to exploit it himself. He built the mill in 1821. He was succeeded by James Heron in 1830, who died in 1849.

During this early period, the Water of Ayr hone improved his reputation "probably partly due to better processing: both the raising and dressing of stone were performed with much more care and neatness than previously. In 1832, "finely pounded Water-of Air-stone" was suitable to be used on a brass carrier to give a 'exquisite edge' to razors, lancets and other fine cutting instruments.

In 1836 Knight the Ayr stones ranced below Turkish and Charnley Forrest stones. His judgment was copied in later encyclopedias. In 1858, Robert Hunt gave special praise to "Water of Ayr Hones" (this was assigned by him to no other sharpening stones produced in Great Britain) as follows: "Large quantities of these whetstones annually are exported to Paris, New York, Melbourne and other foreign countries and are greatly appreciated in this country. "

After the death of James Heron in 1849, the domain passed on to William M'Kie, who must have been a very close relative, his name appears on the same headstone as that of William Heron.

Yet his legacy was challenged, apparently without success, this led to the following ad in 1851:
"*Notice is hereby given that the lineal heir of the late James Heron Esq. of Dalmore is about to appeal to institute proceeding in the Supreme Court Reducting and Setting aside the Service and Titles of Mr. Wm. M'Kie, residing at Knowe, near Ayr, who is wrongously in possession of Mr. Heron's Estates ...* '.

The whole matter of the ownership and management of the quarry and factory in this period is very unclear and it is not known who the "legitimate heir" was.



Kenneth Montgomerie

Mr. Kenneth Montgomerie says his family papers indicate that Wm. M'Kie's daughter married William Dunn who was operating the quarry since 1850.
He came into the possession of the estate at the death of M'Kie by virtue of being the husband of the female heir. Dunn died in 1868 and the estate, with the quarry, was then managed by his widow, probably as trustee for their daughter, until 1876.

A very curious feature of the matter is that in July 1850 the whole property was advertised for sale, together "*with the valuable Water Of Ayr whetstone quarry ... and the mill and houses connected with the said Quarry*".

Three months later Wm. Pettigrew from Stair Bridge, near Tarbolton, Ayrshire, advertised as follows:
'*Water of Ayr Hones.*
The Subscriber begs to inform the public that he is the puchesed from the heirs of the late JAS. HERON esquire of Dalmore, part of the estate on which is situated the celebrated Water Of Ayr Hone Quarry and has discovered an extensive vein of the stone, equal, if not superior to the previously already known, on his property. Jas Miller, Esq., Merchant, Ayr, has been appointed my sole agent, to whom all orders are to be addressed'.

There seems no doubt that Pettigrew wanted to arouse the impression that he had bought the main quarry. However, Mr. Montgomerie thinks Pettigrew bought only a very small part of the estate, called Bridgend on the south side of the river between the road at Stair Bridge and Glen Burn Tang, and that he was the innkeeper of the inn there. If his words are read carefully, he says that he not really owned the Water of Ayr whetstone quarry and it is possible that he found an area with some good grinding stones in the bed of the stream. Mr. Montgomerie says there is an oral tradition in his family that local employees "salted the area with pieces of good hone" as a joke.

We have certainty in 1876, because in that year the Dalmore estate came in possesion of the Montgomerie family. John Cuninghame Montgomerie had married Dunn's daughter in that year and became the owner. He worked the quarry, and was shown in 1878 as "hone manufacturer, Stair". In 1893 he was at the "Water of Ayr and Tam O 'Shanter Hone Works, Stair" and he continued as proprietor until 1900.



He built a new Dalmore House to replace an earlier one. It was burned down in 1958 and what is left is a ruin.

The competition with the Dalmore quarry began early and was more severe than the Pettigrew affair. After the Smiths were displaced from the Dalmore quarry in 1815, they began the Enterkine quarry (in the parish of Tarbolton) to exploit and sell the stone under the name 'Ayrshire Hone'. It was considered of lesser quality than those of Dalmore, but remained in production for about a century. In the Report of 1852, Hugh Brown was indicated as "hone manufacturer, Milton'. Milton is the name of the hamlet north of Stair Bridge.

There is at present nothing known about Brown, but his stone was probably mined in the Enterkine quarry. By the 1890s there was according to reports of 1893 and 1899 a competing company in Milton, Donald and McPherson, "hone manufacturers'.

However, it seems fairly certain that the company really was G. McPherson & Co, Milton, and Donald McPherson was a firm of ironmongers in Glasgow who had begun as J.A. Donald & Co. Donald took McPherson as a partner into the company when he was a major supplier of hones.

Gilbert McPherson was a mining engineer and ran a coal mine at Machrihanish in Kintyre, it is supposed to came to the Stair district around 1880 to start a coal mine for a Mr. Galloway at Trabboch and he married to Pettigrew's daughter. He is believed to have found the honestone at Quilkieston and started the quarry in about 1881 (Quilkiestone NS433230 Stair, Strathclyde Region. WGS84 Lat N55: 28:34 (55.476105) Long WGS84 W4: 28:48 (-4.480047)).

At some point before 1900, his company became G. McPherson & Co. Junior. This probably means that his young son took over his honestone interests. We shall see later that he worked the quarry at Enterkine as well as that at Quilkieston, which he called Meikledale.

J. C. Montgomerie clearly suffered from the fact that its local competitors produced inferior hones, but also sold them under the name Water of Ayr Stone. Apart from the powerful text on the labels Montgomerie stuck on his hones and his adoption of the name Tam O'Shanter Stone, in January 1885 he sent a printed letter to his customers stating his prices and that he would in future supply the stone directly to his customers.
The problem of local competition was solved by the formation of a private limited company, the Water of Ayr and Tam O'Shanter Hone Works Limited, registered in Edinburgh on October 2, 1900.

The main aim of the company was: -
"To buy or otherwise acquire the business of whetstone manufacturer, stonemason and trader carried on by John Cuninghame Montgomerie of Dalmore in the parish of Stair in the county of Ayr, Dalmore, Ayrshire, and the company of whetstone manufacturers, Quarrymen and traders conducted by the firm of G. Junior McPherson and Co., Meikledale in the parish of Stair and Enterkine in Tarbolton parish, Ayrshire and Glasgow, together with the goodwill and the entire property ... of their respective companies. "

It seems that by this Montgomerie had received control of his former competitors.

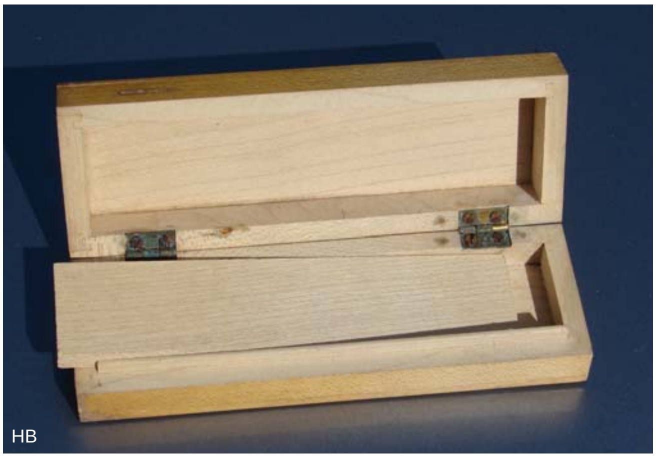
Donald died in 1926, McPherson much later. After the death of Donald, J.C. Montgomerie Junior bought the firms of Donald and McPherson, who continued selling abrasives until the 1950s.
Over the years there have been natural changes in the lists of directors and shareholders, but there were three directors and seven shareholders, now all members of the Montgomerie family. Mr. Kenneth B.C. Montgomerie acts as managing director and company secretary, he is a grandson of the founder.

The product range
For at least a century, probably from the beginning of the production of whetstones in Stair, there is a very wide range of sizes and types (forms) of the final product before.

This corresponds to the wide range of applications of polishing and grinding, from small clock and watch parts and jewelry and the tool trade in which the were used to grind large tools like the knives leather workers.


HB

It also fits the nature of the stone itself, mined or extracted in blocks of variable, but usually small and irregular shape, so it is useful to have to cut a relatively small number of large whetstones and a large number of small ones.
Mr Kenneth Montgomerie said that the triangular section and a circular cross section, are rare and only made on special order.


HB

In 1983 the wooden boxes and wooden planks for hones were not supplied anymore, but they were much in demand for a period of about a century.



The boxes and planks were made by the firm Smiths firm in Mauchline, who were known for their beautiful woodwares, particularly snuff boxes.



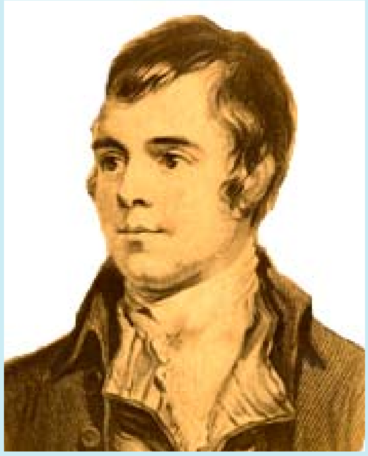
Hard wooden boxes, polished and lacquered, were considerably cheaper than deal boxes that not only were polished and varnished, but also decorated with black lines around the edges and in many cases with pictures - View of the "Land O'Burns" - which the buyer recalled the area even more famous for his poet Robert Burns, then the grinding stone or wooden boxes.



The flat or plate-shaped whetstone was glued to the bottom of the box and the upper part or the cover could be lifted, or at one end, been provided with hinges.

The bottom can have a handle for easier use of the whetstone. Some pocketknife whetstones were mounted in a box whose lid was hinged along the long side.

Usually they suggested that Tam O'Shanter or Water of Ayr whetstones were '*best used with water or saliva*', but a thin oil can also be used ...



Robert Burns was born in 1759 in Alloway, Ayrshire, Scotland. A writer and lyricist devoted to the presentation of the lives of ordinary Scots. He is celebrated worldwide by Scots on his birthday, January 25.

Burns was born into a poor peasant family. His parents took care he got a good education when he was young. He began writing poetry in 1783, and used a traditional style and the Ayrshirese dialect of the Scotish. The poems were well received locally, and were issued in 1786 under the name of Poems, Chiefly in the Scottish dialect by a printer in Kilmarnock. This made him famous in Scotland and as a result, he spent several years in Edinburgh.

But his fame brought him no provit, and he was obliged to go back to the farm. That also turned out to be not profitable either, and in 1789 he started to work for the government at the Department of Customs and Taxes. Robert Burns died at the age of 37 due to heart problems.



Tam o 'Shanter is a beautiful, epic poem in which Burns paints a vivid picture of the drinking in the old Scottish town of Ayr in the late 18th century. The poem is populated by several unforgettable characters, in which of course Tam recognized himself, his bosom friend, Souter (Cobbler) Johnnie, his patience and his wife Kate. We are also introduced to Kirkton Jean, the ghostly, "sweet wench", Cutty Sark, and let's not forget his brave horse, Maggie. The story contains humor, pathos, horror, social commentary and in my opinion is one of the finest works that Burns ever wrote.



The quarry and mine



The whetstone was originally found in the bed of the river, later in the middle of the 19th century the vein south of the river was found from a quarry about 40 feet deep.



Further expansion was followed by mining, by which the Dalmore mine was formed.





The original shaft, dating from the 1870s, was still used for emergencies and for ventilation, it is about 120 feet deep and provided with ladders and planks.

Pumping has always been necessary and until about 1938, this was done by a beam engine (now unfortunately completely removed) which had a balance of 20 feet.
The hoisting was done by a separate steam engine, but both engines were powered from the same Lancashire boiler.



A new shaft north of the original was dug when the engine was taken out of operation.



The cage had a hedge of lying steel cover plates, an electric bell system and was hoisted electricaly.



The drive and drums were in a barn that served as a control room, with shelves for helmets, lamps and boxes with batteries. The cage is about 4 feet square and 6-7 feet high and has rails on the floor with the rails to connect them with the rails in the mine corridors, so a lorry could ride over it.

The normal way in and out for the miners was a inclined shaft with steps, with the entrance in the hillside below the hoist axis. If nobody was working this opening was protected by wooden doors that could be closed. With normally three shafts open the ventilation in the galleries was fine.
The galleries were numerous and extensive, the mine expansion ran until about 800 yards south of the shafts. All galleries had rails with a width of 20 inches on wooden sleepers and there were about two dozen wooden lorries, made in the companies workshop of the company.

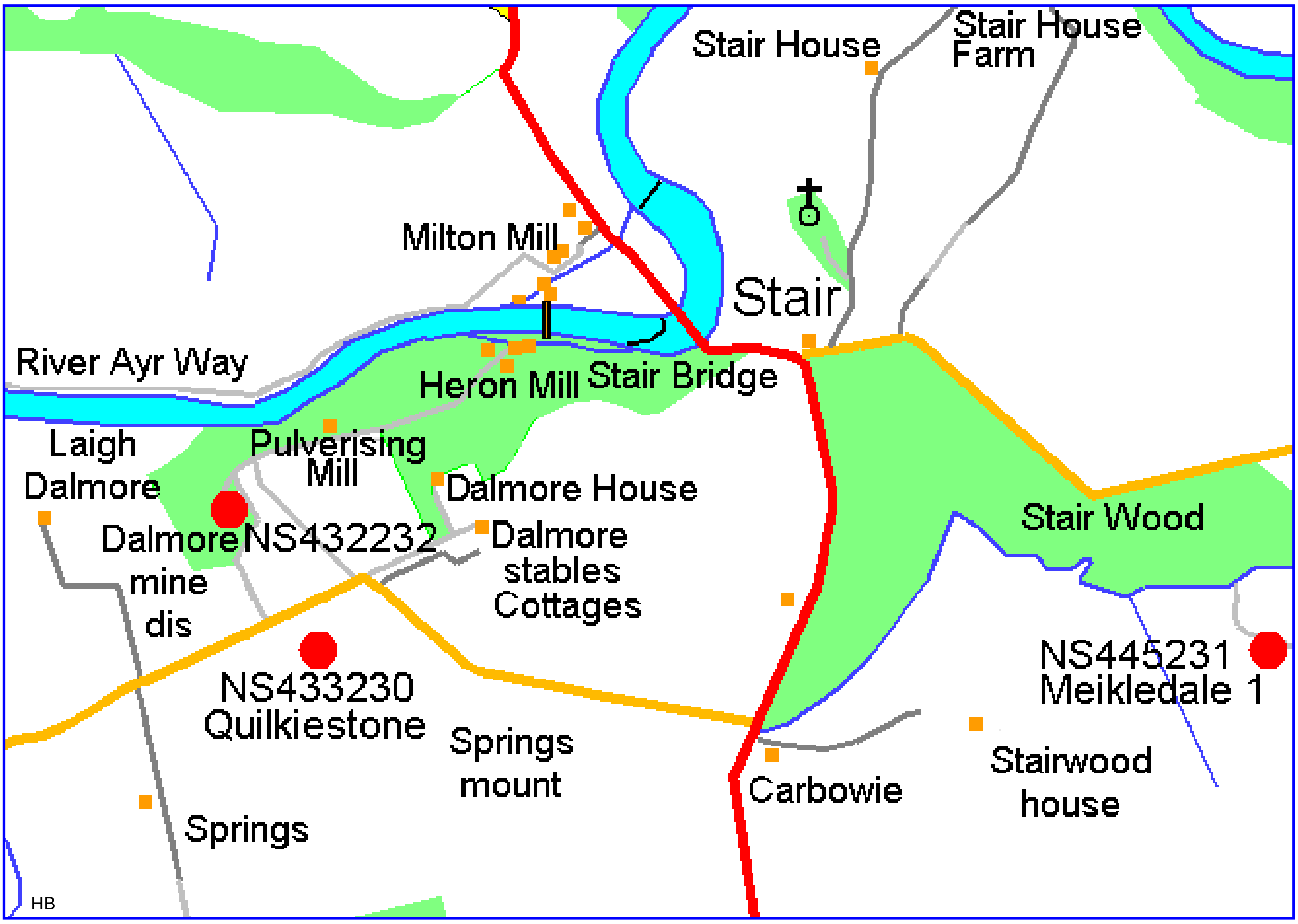
The excavation and transportation was done by humans. Pumping was done by a three-cylinder liquid pump, via a belt driven by an electric motor at the bottom level of the mine. There was also a standby electric pumping set.

It was difficult to obtain good blocks of stone, say from 1 feet square, to produce larger hones. Much of the material has inclusions (some round, making them resemble the eyes of a bull) what, while they makes them nice to see, but making them unsuitable for hones.

As far as possible, the dead galleries filled with tailings, which still had to be tipped. It was also deposited along the wall of the old quarry, so there are no bare quarry walls to see.

The electric power for the mining was generated by the firm's own hydroelectric power station on the north bank of the river. Unfortunately, all copper has been stolen now. There was a narrow tramway from the mine to the mill, with a gauge of 20 inch to be equal to the rails in the mine, which was worked by horses. It was abolished in about 1945. Then there was used a horse-drawn carriage and finally a truck.

The hone factory.
The relationship of the factory building to the mine and the bridge of Stair can be seen on the map.
Two dams for hydropower provided for two flour mills, one on the north side (Milton Mill) and one on the south side (Heron's Mill).



Both mills are still, more or less intact buildings. In Heron's Mill the shaft, the eye and wooden paddles of a large waterwheel is remaining in situ on the north side of the mill, as indicated on the map. It had probably a low-breast wheel.



HB

The original function of the mill is indicated by a giant stone wheat sheaf, in bas-relief on the west wall of the south wing, in the base chiseled headed W. HERON 1821.



HB

Against the wall below it is an external stone stair, which still gives access to the workingspace.



HB

Milton Mill is now used as storage and the drop of 15 feet of water was used for a 58 kW Kaplan turbine variable pitch (made by Boving and installed in about 1935) coupled to a DC generator to supply electrical energy to the mine. A regulator controled the pitch of the blades to match the load.

The machinery was in a separate small building as shown on the map. However, from about 1900 to 1935, electricity was generated in Milton Mill itself, an earlier turbine replacing the waterwheel. From 1935 to 1964, the water-genarated electricity also drove the electric motors in the works. In 1964 a flood destroyed the engines and it was decided to supply the works thereafter from the mains.

The Milton Mill site was where Brown and McPherson cut and polished their stones and used as much as needed of the power of the mill wheel.
Heron's Mill was used by Montgomerie similarly.

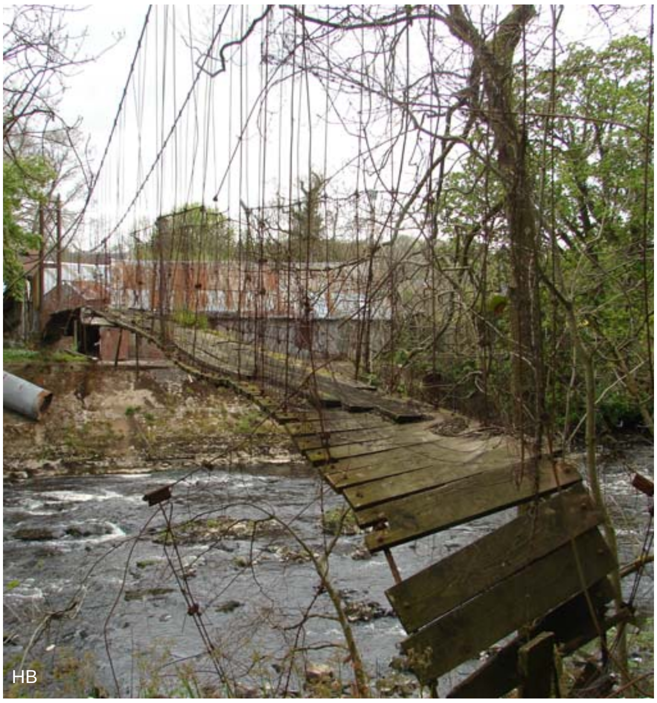


Simon Coull

Since the integration of the firms, they were still in use on both sides, Heron's Mill was used to cut the blocks for hones, using diamond-fitting circular saws and the northern site is mainly used for facing, turning and polishing the whetstones.







The bridge between Milton Mill and Heron Mill.

All machines were powered by the mains now. Unfortunately we could not visit the northern buildings: the bridge is no longer reliable.

Cutting blocks on the southern mill happened with water cooling so no dust problem arose. Some sawing, mainly with large blocks, was done also on the north side, but this was done dry, and a dust extractor hood was used.



Polishing was done on a large horizontal rotating 'polishing plate' with fine sand and water and the whetstone was hand held here until it was sufficiently smooth. Large hones were faced and turned on a lathe without water; a dust extractor hood was fitted. The plant was probably in principle little different than what was used a century or more ago. Electric power is more flexible than hydropower and diamond saws are undoubtedly faster than plain steel saws, but the processes were still entirely hand controlled, and demanded a considerable skill.



The administration is just left ...

Packing for dispatch was done in the northern factory.
It is unfortunate that vandalism is a problem at the works. Stair Bridge and the area immediately to the east (Bridge End, where the inn is) is a very nice area, but is, of course, only an oasis in a dominantly industrial area, formerly very busy with coal mining. Major damage is done by vandals and all windows must be closed with shutters when not permanently bricked or boarded up.
The damage is fairly indiscriminate. The lock on the doors of the inclined shaft of the mine was once shot to pieces, the trees on the bank of the river cut down so they fell into the river, etc.

A little travelogue

Thusday May 3th, 2012
Soon we came to the M69 motorway towards Gretna Green, then they suddenly call the road A74.
A uninteresting road, nothing to see except those 6 lanes, so pretty annoying. Moreover, the landscape suddenly changed: south of the Scottish border all was green and occasionally wooded, here it was brownish, gray and bald. Scotland must have been once long ago, a densely forested area, but the Scots and all other peoples who lived here felled all trees and burned them. It was cold, but the more barren the land was, the colder it became. Today was hot, however, especially in the car. Henk: that's what you get when you pack long johns! Outside the car there was a nasty cold wind.

So we were glad to leave the highway and were conducted by the navigation device to a provincial road. Again not a drop of shadow. Until we finally we reached the River Ayr and saw an old bridge with some trees. O.k, very baren trees, but we still had a little bit of shade. The bridge was out of use: next to it a new concrete bridge was built. Henk had found in the Internet where the firm Water of Ayr Tam and O Shanter must have been, so we went to Stair. But there was nothing to see.
At one point, Henk stopped car in the driveway of what looked like an abandoned farmhouse and decided to ask the neighbors where we had to be.



The man he appealed was talketive and explained that the buildings where not of a farm, but the buildings of the works. However: CLOSED. The owner lived much further on and was not very accessible according to his idea. The name of the owner is Kenneth Montgomerie. We got a little sketch how to find the place he lived. That proved to be near the A70 (main road) in Coal Hall. We went there.
At the entrance to the house we found a walking stick, and took it with us to the house, we thought it was the house we tought we were looking for.

It turned out to be the neighbor's house, Mr. Montgomerie lived in the next (big) house. But the stick was Mr. Watson's and he was happy that we had found it. So we went to the neighboring house, but nobody home there.

Henk suggested to Mr. Watson to ask whether we could stay at his place for the night and try again tomorrow. But while we were talking, the neighbor drove by. We went in our car to see mr. Montgomerie, introduced ourself and explained what we were doing. Mr. Montgomerie (Anno 1933) proved to be a nice man who was very interested in what we are doing.

He took Henk's book into his house for the night so that he could have a look. We stand in front of the house and stay here tonight. Tomorrow he will go with us to the old workshop and the mine.
Unfortunately, there is no more electricity: copper thieves have stolen electrical wiring so there is no more lighting in the buildings. He has told us that a man called Tukker, professor at the University of Birmingham, has written a book about the mining industry here.
He gave us a copy of the booklet. Henk has read it while I was making food, and he thought it very interesting.

Friday, May 4, 2012
We slept well last night even though we had no electricity. The electrical network in the big house is equipped with English sockets, none of our plugs fit.
We decided to use the diesel heater in the car if needed. Yet we spent the whole night without heater, this morning we used it to have a bit more warmth in the car. This morning it was cold in the car, there was a frost warning - but we did not know! We were not very eager to get up, but did anyway at 7:30.
Then the heater had already done his job and we had a nice temperature inside the car. But at 8 o'clock the curtains were still closed.



The plaque of Dalmore House

Mr. Montgomerie had seen this, thought we were still asleep and began to blow reveille on an old bugle, probably left over from the war. He was already in full regalia to take us to the mine. First we had a sandwich, made coffee and tea, then we could go. Meanwhile our host came with a few ducks eggs for breakfast! We have stored them for later.



We drove behind our hosts car to the mine and the old Dalmore House. That house was a really big house, much bigger than the house he lived now, but at some point it became to big and was abandoned. Ringleaders put it ablaze. Also in the buildings of the mine was in several places arson, copper thieves had stolen the electricity wiring. That was the reason now everything was closed and sealed. But there were keys to the locked doors and everything was opened.



The oldest building was originally a watermill for flour and descended to the 17th century.
The water came via a dam and a diversion to the water wheel that drove the entire mill. The mill had also energy enough to be used for making whetstones. Later it was taken over by the Montgomeries and used for storage of ready made whetstones.



Beside the old mill buildings were workshops for manufacture and storage of stones as they came out of the mine. The warehouse was still full of remnant whetstones in all shapes and sizes.
It was a real time capsule.



We asked what should happen to the whole complex when he was not there any more, than he shrugged: he had no idea.



We thought it could be used as a museum: all the machines were still there; you could think the staff could come back any time to get back to work. It would only be an enormous job to clean and catalog everything. Everything was covered in inches thick dust (the mine was definitely closed for 15 years) and to find out what all meant would be a job for a few years.



Outlet of the generator at the Milton mill.

The mine had its own electricity supply: on the other side of the river stood the buildings we saw yesterday. The machinery for DC power generation. Hence, DC cables are usually thicker than AC cables. The copper thieves are so fanatical there.



We were presented a whole collection of stones.

Moreover, we were told what kinds of stones there were and where they came from.
It appeared that there had been a few quarries, but all were also closed down. Most were even completely filled, because the cows threatened to fall in the holes. There is nothing more to see.

During the war, the company milled scrap and pieces of waste stone into powder for the Royal Navy and it was used for painting warships. The dust made a gray color, gray pigment for paint was not enough available.
Originally the stone was mined in an open pit, which was still clearly visible. Mr. Montgomerie showed us where it was, how much land there was excavated.



Moreover, of course the quarry became ever more deeply excavated, until at one point it was easier to turn it into a real mine.



Then the open pit was filled in with waste rock.
During the war that waste rock was excavated again for a large part in order to be pulverized.
This is why there is still a considerable hole remaining in the ground now.
Today, the area used for skeet shooting as an activity to raise money for the village community. Last year the yield had been 300 pounds and they were very happy with that.



The pulvering mill.



Finally we were back at our car by 13:30.
Henk was very pleased with the informations, he has a whole series of pictures and a nice collection of stones.



We went back to the other side of the river and stood at the entrance to the electricity supply to eat a sandwich with backed ducks eggs.



Stair Bridge.

Afterwards Henk went back to the gentleman he had spoken earlier to thank him for his directions.
Henk has told him that he even received stones: that we had to see as an honor, usually Mr. Montgomerie was not so generous with his stones.
We also went to the river and have gone to the old buildings to have a look around. We could see that there clearly had been robbed, there were still parts of an old engine. That will have been demolished for the copper.
Later on we also found old cable coating, all open cut.
So they have taken clean copper only.



The feed channel to the Milton mill and generator.

The church was a little further, there was a fairly large paved parking.
We put the passengerchair back for Henk, I laid down on the backseat and we had an afternoon nap.

Completely relaxed we went on afterwards. Henk has found a site were we can stay for the night.



This time he likes to have access to electricity so he can work with his computer. Moreover, the weather will be cold again tonight. We have found a suitable location in the vicinity of Mauchline. There is some kind off tearoom and they had except the coffee and tea, ice cream too. Moreover, you could buy hot food, but at 5 o'clock the place was closed. They even had wi-fi, but it stopped at 5 am. That was a pity, because when Henk just wanted to collect his postage via the Internet it was 5 o'clock. We will make our own food, we have no choise. Henk thinks it's allright because it is Friday = pancake day!

Locations of quarries, mines and works

The locations of quarrys and mines are in my experience not always accurate and should be viewed with some reserve.
The NS position can be properly viewed by using the program Streetmap through http://www.streetmap.co.uk/.
It includes online maps with detailed street maps of Great Britain. You can search by postcode, place name, London street name or OS Grid.

As we will see below, the history of editing hones evokes some unresolved questions about the property and the location of some of the sources of whetstone in the earliest periods.

There seems to exist little doubt that the former mine in Dalmore (NS432232) in the parish of Stair is a development of the original whetstone quarry described as follows in 1793:

"*In the Dalmore area, on the banks of the River Air, is a kind of whetstone, in the country known as Water of Air*."
The stones were exported to different parts of Europe and America.

James Arthur, a local man from Privick Mill, a century later in 1884, paid a visit to the place in Rab at the Ramblers's Rambles on the banks of Ayr:

"*Gradually we come to the Dalmore whetstone quarry, where the famous Water of Ayr whetstones are extracted. The quarry is large, because the fame of these stones is worldwide. It proved to be as good as a gold mine to landlords of Dalmore. We wonder whether any gold mines have proven to be as uniformly successful. A little further on is the hone works, where the stones are cut and polished. The Ayr provides propulsion. The works is a fairly large building and there are large sheds for the cut and uncut stones*".

This is the only source of a hone works working throughout the year. The stone is very fine-grained, consisting of a mixture of quartz and white mica in almost equal proportions, with a grain size somewhere between 0.025 and 0.05 mm, and the special properties appear to be more dependent on the texture instead of mineral composition. It is said that it is a natural baked and hardened shale, locally known as "Calmy Blaes".

About 1.3 miles east of the site is another whetstone mine (NS445231), mentioned on the 6-inch geological map of 1966 as the Meikledale mine. The stone here is finer but less pure than that of Dalmore and there was still some demand for it so it was won sometimes.

This mine was opened in 1920 and was not a continuation of an earlier quarry, although probably grindstone material was reported from this area in 1841.

Kenneth Montgomerie, the current director of the hone works knows about an other whetstone quarry further on, on the burned area of Glen Tang near the Quilkieston Farm, that worked from about 1881 untill the stone ceased on a line of fracture in 1926. The quarry was called Meikledale until the mine of the same name replacing it, then it was filled in. The location was about NS451234. So there have been two quarry's with the same name.

There was an other quarry in Enterkine (north of the River Ayr, in the parish of Tarbolton), mentioned as a whetstone quarry in the memorandum of the Water of Ayr and Tam O'Shanter Hone Works Ltd., when the company was founded in 1900.
This may be the 'Old Quarry' (NS421240) on the 6 inch geological map of 1966 indicated as '*very hard gray baked mud stone*'.

Long ago, the quantity produced hones was small and it is stated that in 1841 only two men were employed. One in the quarry and one 'to form and smoothen' the stone.
Both operations were later performed by machines. It is likely that these operations are carried out in a part of Wm. Heron's flour mill, built in 1821, because it had a large waterwheel and therefore probably enough spare energy. In the remains of the building still can be seen the old grinding table. This mill (NS435234), on the south side of the river, was used for a long time as part of the hone works. As part of the Dalmore Estate it would be related to the Dalmore quarry.

The stones of the other quarries would be processed, and if had to be sawn in Milton Mill (NS436235), on the north bank of the river.

It is an interesting tradition of the whetstone industry, to the extent that the whetstone was mined in open quarries (the winning was done only in the summer), that the surface of the quarry was covered with earth in the winter to prevent frost splitting the damp stone.

Other rather local sources of potentially competing whetstone were:

1. A deposition of 10 ft "Water of Ayr" stone, existing of 'for the greater part of material that is similar in appearance and quality to that mined in Dalmore', located below Troon Harbour Sill (approximately NS3131) was not commercially operated;

2. A fine-grained gray sandstone quarried in the Craiksland quarry (NS355318), which was commercially exploited, with a considerable foreign trade.

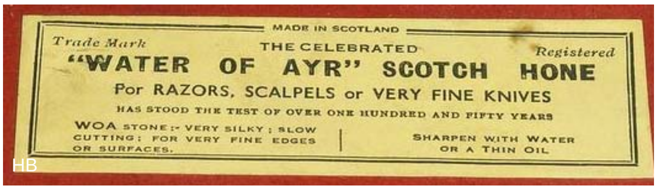
The quarry was not worked by the company at Dalmore, but it's stone was processed by it and sold as "Ayrshire Blue Stone", intended to be used preliminary to the removal of large blemishes and scratches before the use of the Water of Ayr stone.

Sadly, these 2 stones are not in my collection.

The stones

The stones are formed under natural conditions. Due to the shape of the abrasive grains and the natural variations of it, the grain size can not be determined exactly. In my view it can not be done at all.
However, the grain size is listed only as a guide and may differ from stone to stone. Grain size and sharpening results are not necessarily equal. My preference is to call the Scottish stones by the kind of stone and not to mention the name of the company that produced it.
Also with the Belgian coticule we're not talking about a Burton, Grogna or Celes stone, but we make a distinction in mine. Although about the Thuringians are very different views ...

Water of Ayr - Meikledale quarry





The problem with descriptions of these hones emanates from the fact that in the early days the same name was used for stones from different quarries and were sold by various suppliers. As a result, also the quality was different. This led to much annoyance.

In the early 20th century, the company announced that henceforth the famous mottled beige stone would be known as the "Tam O'Shanter". From that time the name "Water of Ayr" should be reserved for the finer and scarcer dark stone with black spots.



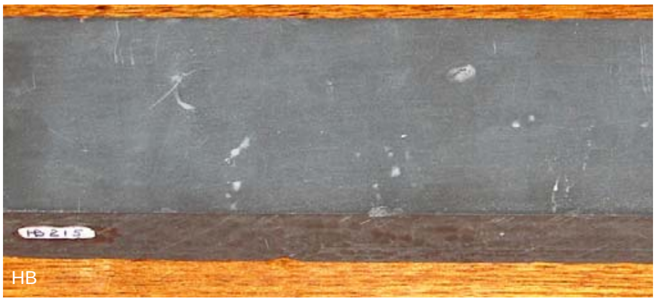


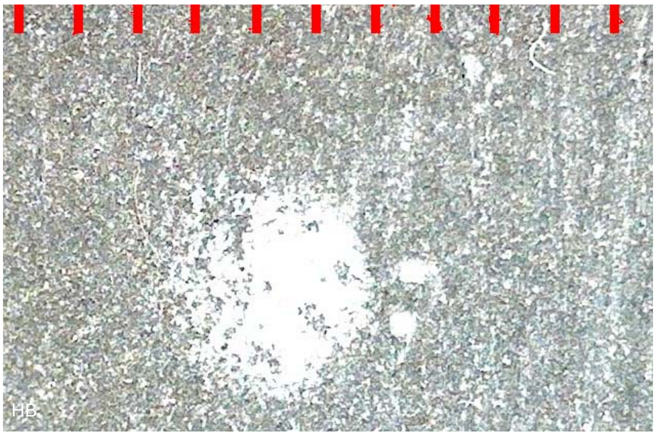
The distance between the red lines = 0.5 mm

Water or the Ayr (WOA) gives a very fine cut and the grain size is in the range of 9000 to 11,000.
The Water of Ayr is charcoal-gray to black and looks homogenous. It looks and feels like a black Escher. Traditionally it was for razors and scalpels.

It is rated as "very fine" by the company and in my experience it is similar to the Coticule and Chinese 12K. During the honing it feels silky soft. The slate-gray "Water of Ayr" stone is very hard to find. It is finer than the TOS and especially perfect suitable for sharpening razors.

The Dark Blue Water of Ayr - Enterkine quarry







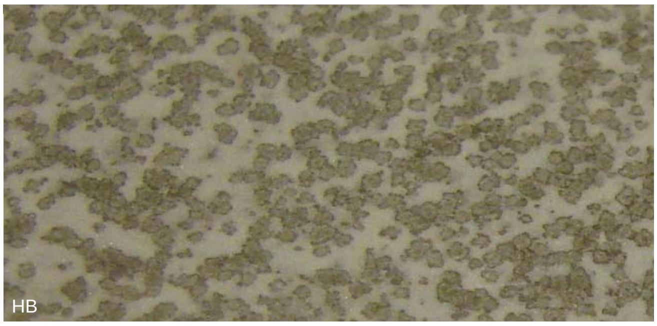
After the Smith family in 1815 was displaced from the Dalmore quarry, they began to exploit the Enterkine quarry (in the parish of Tarbolton) and sell the stone under the name 'Ayrshire whetstone'. It was considered of lesser quality than those of Dalmore, but remained in production for about a century.

The company G. Junior McPherson & Co. operated the quarry at Enterkine in 1900, as well as the one in Meikledale which was called Quilkieston. Using the same name for different stones was very confusing and was addressed on 2 October 1900 by the creation of a private company, the Water of Ayr and Tam O'Shanter Hone Works Limited. It seems that by this Montgomerie had gained control of his former competitors.

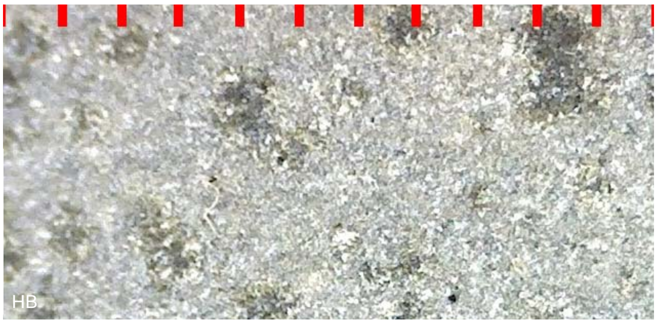
Tam O'Shanter - Dalmore Quarry



Tam O'Shanter



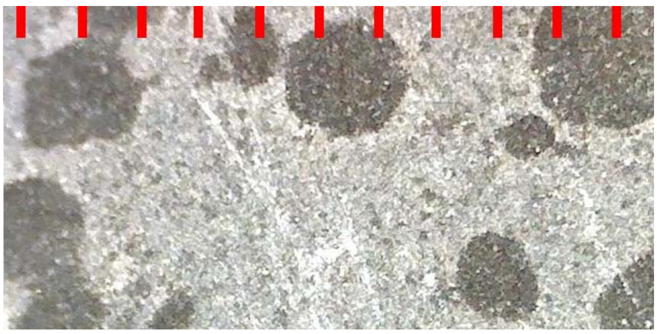
Dark



White



Dark blue





The stone is easily recognized by its appearance with the many speckles and are beautiful to look at. The fineness of this stone is interpreted differently and varies from 6000 to 8000. This spreading is normal since the stones in nature also is not uniform.

Some use this stone to the finish or to remove small micro blemishes. The stone creates a smooth cutting edge and also has another attractive feature because it is good to be used with razors that are sensitive to micro-chipping. When using a slurry the stone polishes much faster.



An interesting item is that the Tam O'Shanter was sold in two versions: one for furniture makers, etc., and a "fine" version for razors.

The distinction is made on the label and on the original box, and is marked with a F. Traditionally it was for jewelers and watchmakers. It is rated as "Fine" by the company.



There is another variant that does not look like the other TOS stones - the white Tam O'Shanter. This was sold for the production of "very fine cuts" and is even better than 8000 and neares 12,000.


MADE IN SCOTLAND
Trade Mark THE CELEBRATED Registered
WHITE "TA... 'SHANTER" SCOTCH HONE
FOR VERY ... SHARPENING OR POLISHING
HAS STOOD THE TEST OF OVER ONE HUNDRED AND FIFTY YEARS.
Awarded Gold Medals, London International Exhibition, 1885, and Mining Exhibition, 1890
W. TOS STONE (SNAKESTONE) ... SILKY AND VERY SMOOTH; SLOW CU...ING: FOR VERY FINE EDGES.
SHARPEN WITH WATER OR A THIN OIL.
HB



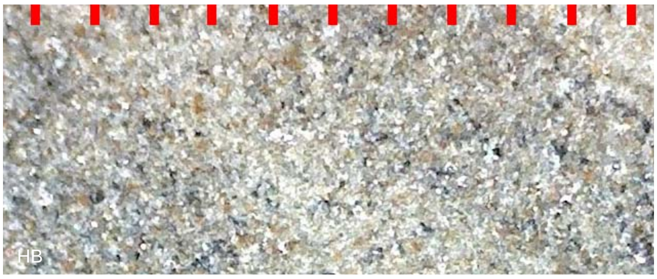
One of the advantages of a regular TOS is that no matter how long you sharpen, no burr occurs. You therefore really are able to remove any small scratches and microchips.

The Belgian Blue and normal TOS are fine to use for the refinement of an aggressive scratch pattern left by a synthetic Norton before going to a finishing stone like the fine TOS or Water of Ayr.

Dalmore Blue - Craiksland Quarry









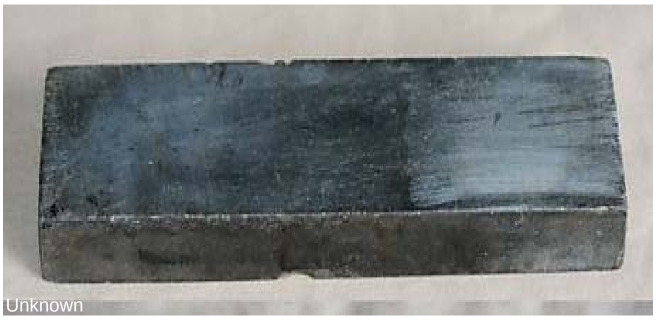
In North Ayrshire are a number of quarries used to win the Carboniferous rocks, especially massif sandstone from the Limestone Coal Formation.
The sandstone from the large Ardeer quarry, east of Stevenson, produced a good fine-grained white stone (known as "Stevenson stone"). It was used locally and exported to Ireland. In Troon stone from the Craiksland Quarry and nearby Collenan Quarry, was used for local building and decorative work (eg church interiors).

A number of important hard-stone quarries were also present in the Kilmarnock area. Stone from the Dean Quarry, who stopped production in the middle of the 19th century was used in many Kilmarnock buildings.

Quarries near Crosshouse, including Woodhill and Greenhill Quarry, also worked with sandstone. Smaller quarries south of Kilmarnock supplied a poorer quality reddish feldspar sandstone of variable grain size, used locally as a building stone.

William Kilpatrick and his sons were "Quarry masters" in the Craiksland Quarry around 1900-1901. A new road to this quarry was built in 1937. It was less than a mile long and ran from Crossburn Farm to the Craiksland Quarry.
It is near Symington, halfway between Kilmarnock and Ayr.

The quarry was abandoned 60 years ago and is now part of the natural landscape. It was used for military purposes during the war, but it's been inoperative quite a while .
The quarry has returned into nature and is an attractive part of the country. One would think it never was a quarry.





The stones are sometimes difficult to recognize.

The Dalmore Blue is coarser (1200) and a bit faster than the TOS with a grit from 4 to 5000. The Dalmore Blue is an ideal stepping stone to a medium-fine stone, like the TOS or Belgian Blue. I use my Dalmore Blue after grinding a bevel with an 1k stone (Dalmore yellow). The Dalmore Blue removes the grinding traces of Yellow pretty fast and it lays the foundation for a beautiful polish of the cut with a Tam O'Shanter. The of sharpening the cut with a White Tam O'Shanter can be further refined with a Water of Ayr.

Dalmore Yellow



"*The Celebrated Scotch Dalmore Yellow Hone For Carpenters and Joiners. SDY stone - Smooth, Fast Cutting. For coarser or preliminary to finer honing.*"



Coarser stones like the trade 'Mikado' of a yellow stone are supplied in small quantities, mainly in the form of Guts Slips, which are tapered small plates with rounded corners. (Mikado is the name of a yellow color.)

In the catalog of 1915, were grinding stones with a rectangular cross section of different sizes listed as the "Mikado Oil and Water Stone", 'a very fast grinding Carpenters and engineering Whetstone' and offered at prices two-thirds that of Tam O'Shanter or Water of Ayr whetstones with corresponding dimensions.



It looks like a nice soft sandstone with a particle size of less than 1000.

Because of the open pores the stone absorbs a lot of water and blunt grains are quickly replaced. It grinds a cutting edge fast and nice so it is a bevelsetter. After that there can be sharpened with a finer stone. Is not suitable for razors. This stone completes the collection of Scottish stones.



A pile of Dalmore Yellow

Dual grit





Tam O'Shanter and Dalmore Blue





Tam O'Shanter and Dalmore Yellow

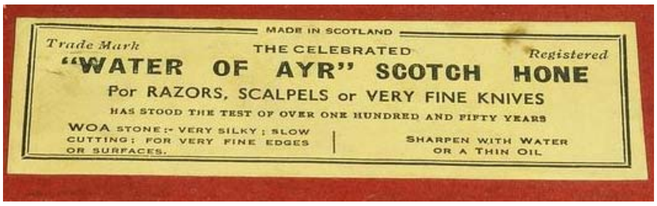


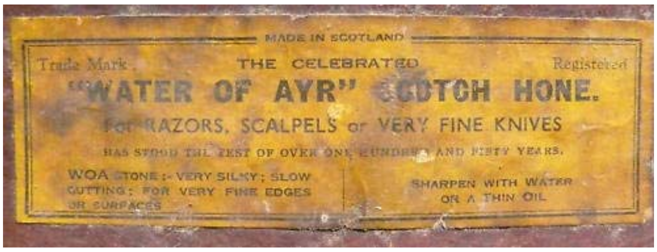
Water of Ayr and Tam O'Shanter

Also called Schotch dual hone or Combo. There are made double hones, with on the backside a thin plate of gray Tam O'Shanter stone of the Dalmore mine, glued to a thin sheet of blue Water of Ayr stone from the Meikledale mine. Thus the names seem to have been used for a certain time.

Historically, the Tam O'Shanter and the Water of Ayr stone are lumped and called "Scottish hone" or "Snake Stone". This still leads to confusion.

Found labels







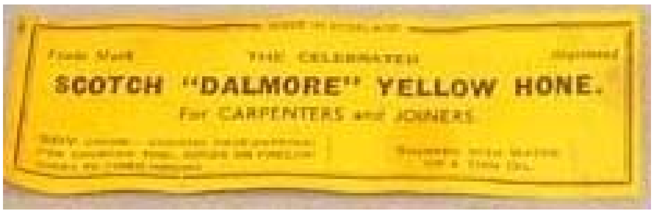
























Summary



Dark Blue Water of Air



Tam O Shanter Scotch hone



White Tam o Shanter



Dark Blue Tam O'Shanter



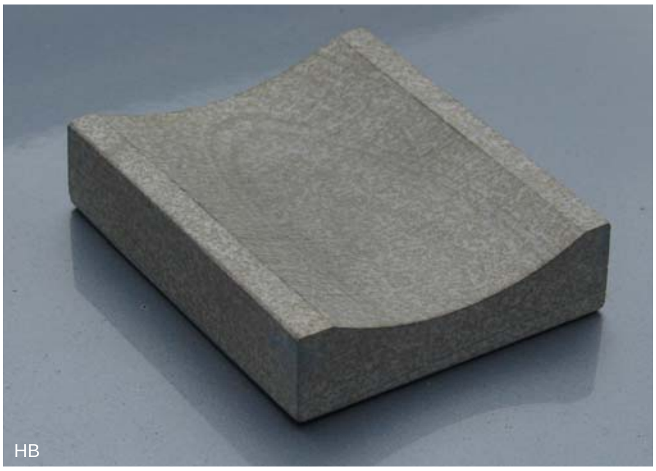
Dalmore Yellow



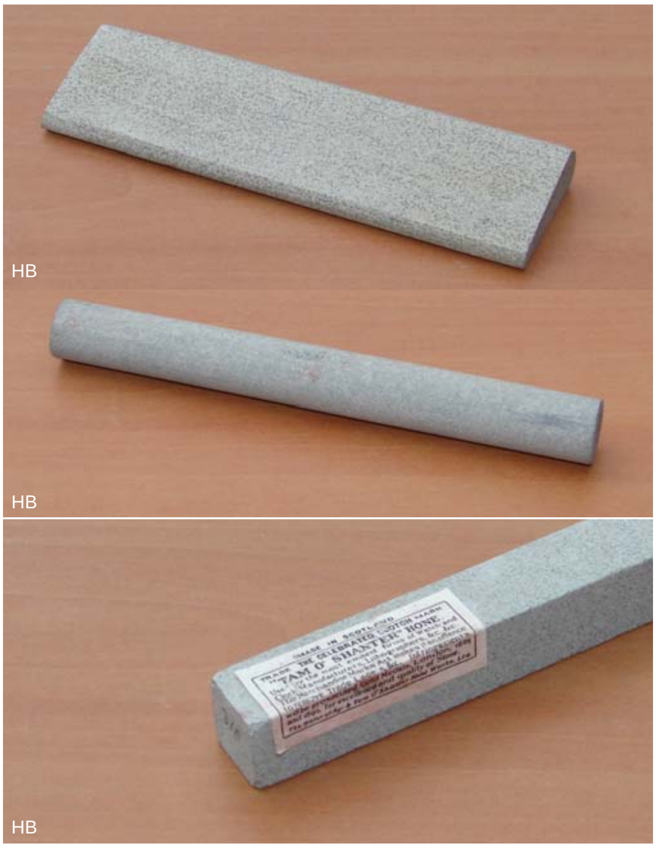
Dalmore Blue



Pierre Rouge - Water of Ayr for the French market



Tam O' Shanter Gilette stone. Were specially made for the Army. "A British soldier was Clean Shaven" said Kenneth Montgomerie.



There were several stones specially made for eg microtome knife sharpening, slip stones for gouging and special shaped stones for goldsmiths.

GB Wales



Belfast
Cumbria
Douglas
Man
Lancas
Pres
Greater
Manchester
Merseyside
Liverpool
Gwespyr
Ma
Yellow lake
Moel Siabod Mountain
Anglesey
Che
Mold
Clwyd
Ches
Inigo Jones Croeson
Llyn Idwal
Gwynedd
Wartes
Shrewsbur
Aberllefenni
Shropsl
Liandrindod
Wells
We
Powys
Dyfed
Carmarthen
Gwent
Swansee
Newpo
HB

GB Wales Gwespyr Sandstone



Gwespyr is a village in Flintshire on the North Wales coast. Gwespyr had a population of 289 people in the 2001 census. It overlooks Point of Ayr on the west side of the River Dee estuary with its sandy beaches with dunes.
The hills of the Clwydian Range behind the village form the eastern boundary of the Vale of Clwyd. Gwespyr is also called Cymraeg but that is an strange name.
In Old English it means 'West-bury, which can be interpreted as 'the west fort', meaning the western most fort in Mercia. This fort was a strategic Mercian lookout which was reduced in importance with the development of a fortified Rhuddlan.

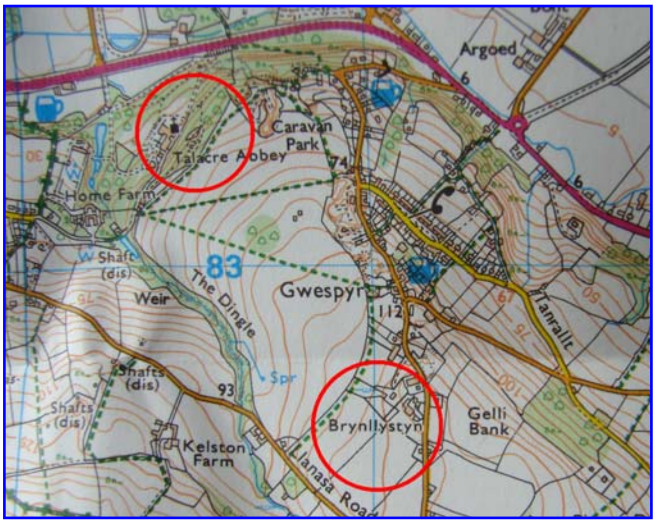


Gwespyr is famed worldwide for its top quality stone quarried in quantity from Roman times and shipped all around the world.

In the North Wales Coalfield the sandstone of Gwespyr and Talacre are the most important; it is fine-grained and has a yellowish-green tint. "Gwespyr Stone" as it became known had a fine grain and remarkable quality of cutting and sharpening.

There is plenty of evidence of the stone industry in Gwespyr prevalent even today, though all but one quarry is disused. The quarry in use today is home to Delyn Metal.

The carboniferous rocks appear again through the intervention of a fault, in the neighbourhood of St Asaph. Silurian strata, mostly of Wenlock age, lie below the carboniferous limestone on the western border of the Flintshire county.
It was used for many buildings around Gwespyr. It was also used to build the ancient Maen Achwyfan at Whitford, the chapel at St Winefride's Well in Holywell, stone carvings in Rhuddlan Castle and Denbigh Castle, St Asaph Cathedral, the Talacre Arms Public house in Gwespyr and Basingwerk Abbey in Greenfield, Flintshire.
Gwespyr stone was also found on sites such as Prestatyn Castle and the Roman bathhouse located in Prestatyn.



The upper circle marks the probable location of the quarry. In the lower circle the word Brynllystyn sounds much like the Norwegian word Brynestein what means grindstone (Slipestein).



Gwespyr Quarries, 2.5km SSW of Point of Air.
Grid Ref SJ 105 835 County Flintshire
OS X (Eastings) 310472 OS Y (Northings) 383300
Nearest Post Code LL19 9TD
Lat (WGS84) N53:20:20 (53.338999)
Long (WGS84) W3:20:46 (-3.346054)
LR SJ104833 mX -372481 mY 7011650



The stone has a fine texture and a hard bond. It's got a fineness between Dalmore Yellow and Blue. The cutting speed is good and you can very well feel what the stone does.

In the local folders the quarry in Waun y Llyn is called a landscape park where hard silica sandstone was quarried that was used for buildings and grinding.
Waun y Llyn quarry Grid Ref: SJ286577



Being in the neigbourhood this was reason enough for us to have a look and collect a sampel. The quarry is located on a high point with a beautiful panorama.

The Waun y Llyn stone is slightly coarser than the Dalmore Blue, is easy to cut and flatten when wet. It is a nice coarse bevelsetter.





GB Inigo Jones - Dragon's Tonque

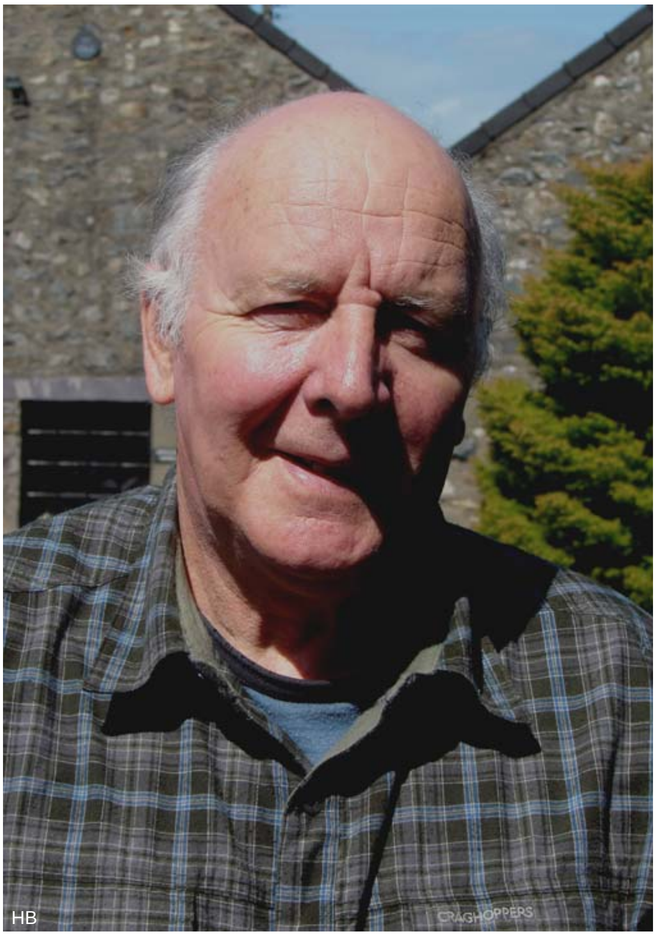


Inigo Jones Slate Works was started in 1861 with the making of preprocessed school slates and is still active in 2012. Hugh Tudor Jones started the company by hiring a workshop that was formerly used as a wood sawmill at the Glynllifon estate.
The slate industry was very important for Wales, just like the coal industry. At its peak - in about 1898 - there were 18,000 people in the industry and about 500,000 tons of slate were produced. The Penrhyn and Glynllifon estates controlled most of the slate industry.

The slate
Between 550 and 400 million years ago, Wales was covered with a deep sea in which mud was collected on the bottom. By the water pressure a hard layer of mud was formed. About 400 million years ago the area of Wales and Scotland struck with the North American continent.
The area disappeared to a depth of approximately 6 km. Due to the prevailing pressure and temperature to 250 degrees Celsius the mud stone changed into a hard slate. There are almost no fossils in it because of the high age.

The Company
Although the company was founded by Hugh Tudor Jones, his son Inigo developed the company further and also was responsible for introducing an enamelling process on slate. This for example was used in fireplaces and electric panels, including those for the Cunard liners Queen Elizabeth and Queen Mary.
The name Inigo Jones became very famous. This was because there was a famous architect of the same name.
It proved to be an excellent marketing tool for the company. The Jones family sold the company in 1974 to the current owner who has invested heavily in the next 25 years.

In 2001 the former workshop was converted into an exhibition space with a shop and cafe. The current entrance was created after the constructing of a roundabout with the A487. Substantial investments are still made.



The current director Roger Davis.



The Dragon Tongue (DT) is a reasonably priced whetstone, made since 1860 by Inigo Jones & Co's Tudor Slate Works in Groeslon, Caernarfon (Wales).
The whetstones are still cut from the material which comes from the quarry Aberllefenni Slate and Slab Mine, Aberllefenni, Gwynedd (Wales).
The "mica slate" is cut on the spot and transported to the workshop.



There it is sawn by a diamond saw with water as a lubricant into smaller pieces until the desired length and width is achieved.



In the workshop, the surface of the semi-finished product is flattened with sand on a rotating cast iron plate. The sand is sprayed with water in a 'hopper', creating a continuous supply of sand and water.

When the desired thickness (12 mm) has been reached, it is dried and packaged in the familiar green boxes and it can be sent to the buyers.







On May 18th 2011 we were in Wales and passed by Inigo Jones in Crouson near Caernafen. There were unfortunately no packaged DT's available at that moment.
At the spot a 'Blue' and a 'Dark Red' were sawn by the boss on our request, with the different size of 9" x 2" x ¾".

The slate in the quarry occurs in light grey (blue), dark grey, light red, dark red and green. The dark red is the hardest. Before use, the surface has to be dressed (perfected), that is: sanded flat and smooth with water on waterproof sandpaper lying on a flat glass plate.
Due to the coarse grain of the sand, the surface of the stone also becames coarse.
This needs to be returned to the fineness of the grain of the stone for an optimal grinding result. Start with 180 grit and then go on to about 1000 grit. This makes a nice smooth whetstone that gives a nice long cut to the tool.
The whetstones are also sold in bulk to retailers who sell under their own brand. A previously known retailer was Salmen.

DT tested
The character of the stones invites to test them. Taken in the hand they look like a dark Thuringian and the dark red like the Belgian Blue Whetstone (BWW).
The difference with a Thuringian is the color of the lapping suspension (emulsion) which is not white and gray, but on the other hand purple and fairly dark.



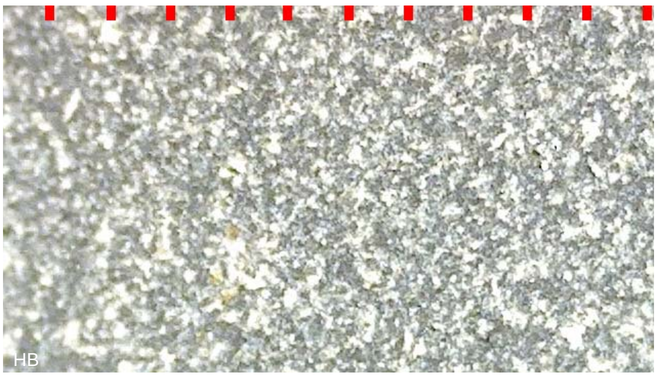
The dark red Dragon tonque.

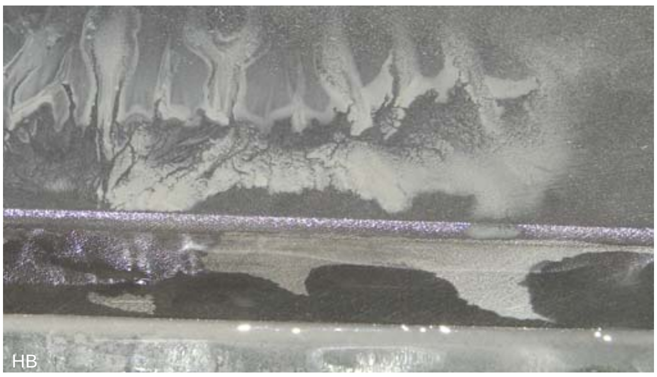


The blue Dragon Tonque.



The grey Dragon Tonque.





The test was carried out with a carbon steel blade pre-processed to a Belgian chunk (GBB = Gelbe Belgischer Brock) with a lot of suspension in order to obtain a beautiful dull cut in the hope to see good how good the DT performs.

Observation
The DT is a slow acting stone that also gives a dull surface. The result is finer than the GBB and in outcome similar to a good Thuringian.
After chromium oxide and stropping with leather the knife cuts a hair at 1 cm height without problems and with little strength a hair.

Conclusion
The testing of the cutting edge indicates that the DT is very suitable for use as whetstone for conventional razors.
Members of a forum indicate the DT can be used as an 8k stone when used with water. With enough slurry it can be used after a 1k stone. After a 6k stone, you do not need slurry.

Slate Honing / Sharpening Stone 8" x 2" x 1/2" /
20 cm x 5cm x 1.2 cm packed in cardboard carton.
Approx weight 300 grams
Price: £ 6.95; Dollars: 11.26; Euros: 7.37 (price 2011).

Address
Inigo Jones & Co. Ltd, Tudor Slate Works, Y Groeslon, Caernarfon, Gwynedd, LL54 7UE
Tel: 01286 830242 Fax: 01286 831247
Email: info@inigojones.co.uk www.inigojones.co.uk
(Michelin 32-H24) Lat (WGS84) N53:04:04 (53.067911)
Long (WGS84) W4:16:34 (-4.275975)



GB Wales Llyn Idwal (Grecian hone)

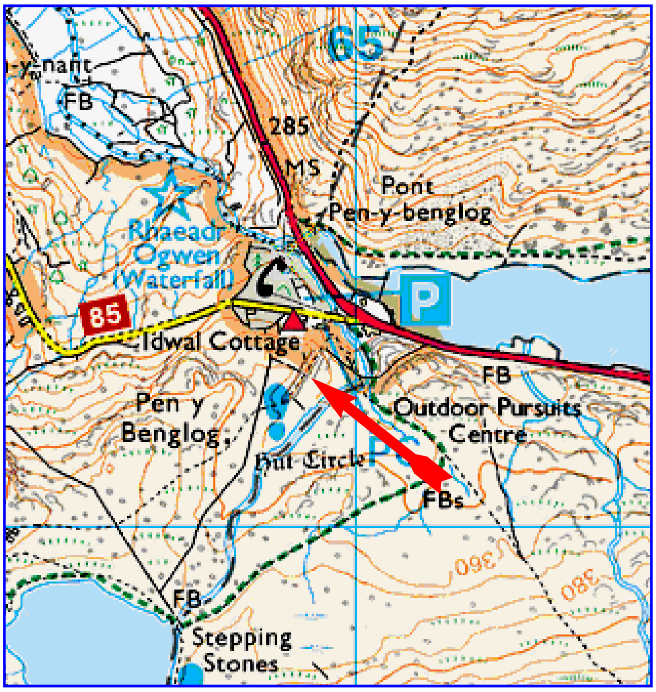


Mount Idwall

Llyn Idwal quarry is located near the Llyn Ogwen.
On Streetmap you will find this as SH648604 (WGS84 N53:07:23 W4:01:12). Many authors give the location simply as "near Llyn Idwal."
Here was a large Novaculite quarry according Kirwan, where large quantities of scythe-hones were cut, and transported to London, Dublin, &c.

Hones were also obtained from a rock on the eastern side of the valley of Nant Francon as Kirwan wrote in "Elements of mineralogy". In part 1 page 238-240 he describes Novoculite.

> 2. Hone-slate. Novaculite of Kirwan. Colour greenish grey, or smoke-grey passing into olive and mountain-green. Occurs in mass, and has a glimmering lustre. It is cut into hones for sharpening the finer kinds of steel instruments,

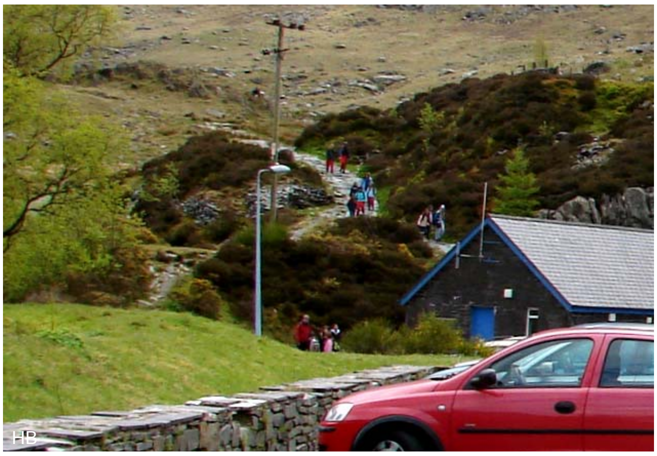


Llyn Idwal is a small lake (approximately 800 m by 300 m) that lies within Cwm Idwal in the Glyderau Mountains of Snowdonia.

The lake is named after Prince Idwal Foel, a grandson of Rhodri Mawr, one of the ancient Kings of Wales.
Legend states that the unfortunate offspring was murdered by being drowned in the lake. In fact Idwal Foel died in the battle against the Saxons in 942 and the legend is that he was cremated beside the lake, as was the burial custom for Celtic nobility.
A number of small streams flow into Llyn Idwal down the hills around LLyn Idwal. One small river flows out of the lake and joins the river Afon Ogwen at Pont Pen-y-Benglog near Ogwen Cottage, immediately above the Rhaeadr Ogwen waterfall.
There is a small pebble beach at the northwest edge of Llyn Idwal which occasionally is used by visitors for recreation, including bathing in the summer months.



This foottpath lead to a beautiful viewpoint.



This foottpath lead to the lake. The path after de building lead to the quarry.



This foottpath lead to the quarry.



The same foottpath in a opposite direction.



The stone is brittel!



The wall of the pit.



The end of the quarry.



The typical flakey surface of a Novaculite.



The stone is very brittel.



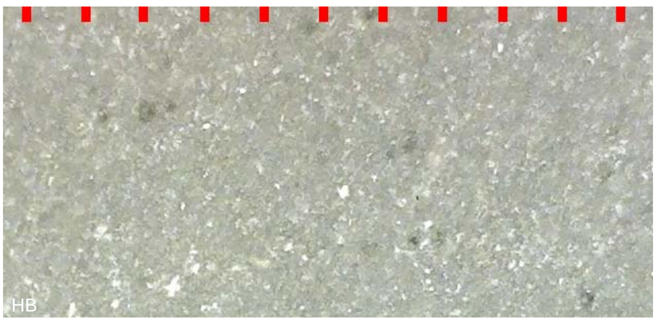
Testing stones.

To make test samples some rectangular hones are made. This is a hard laborious procedure since the stones are very hard. The cutting and grinding took 4 hours for 3 stones. In particular the grinding of the surfaces was very energy consuming and was the motive to construct 2 new machines. The material is easy to recognize by the scratch test. With a carbide-tipped scriber a force of 3000 grams is required to make a scratch having a width of 0.3 mm.
It is very difficult to distinguish from Turkish old stone. A mistake was made easily! A Turkish stone has the same hardness! The behavior of this stone is perfect.
Would be for me the ideal "Cutlers Green".









One slipstone and some old Llyn Idwal bankstones




HB

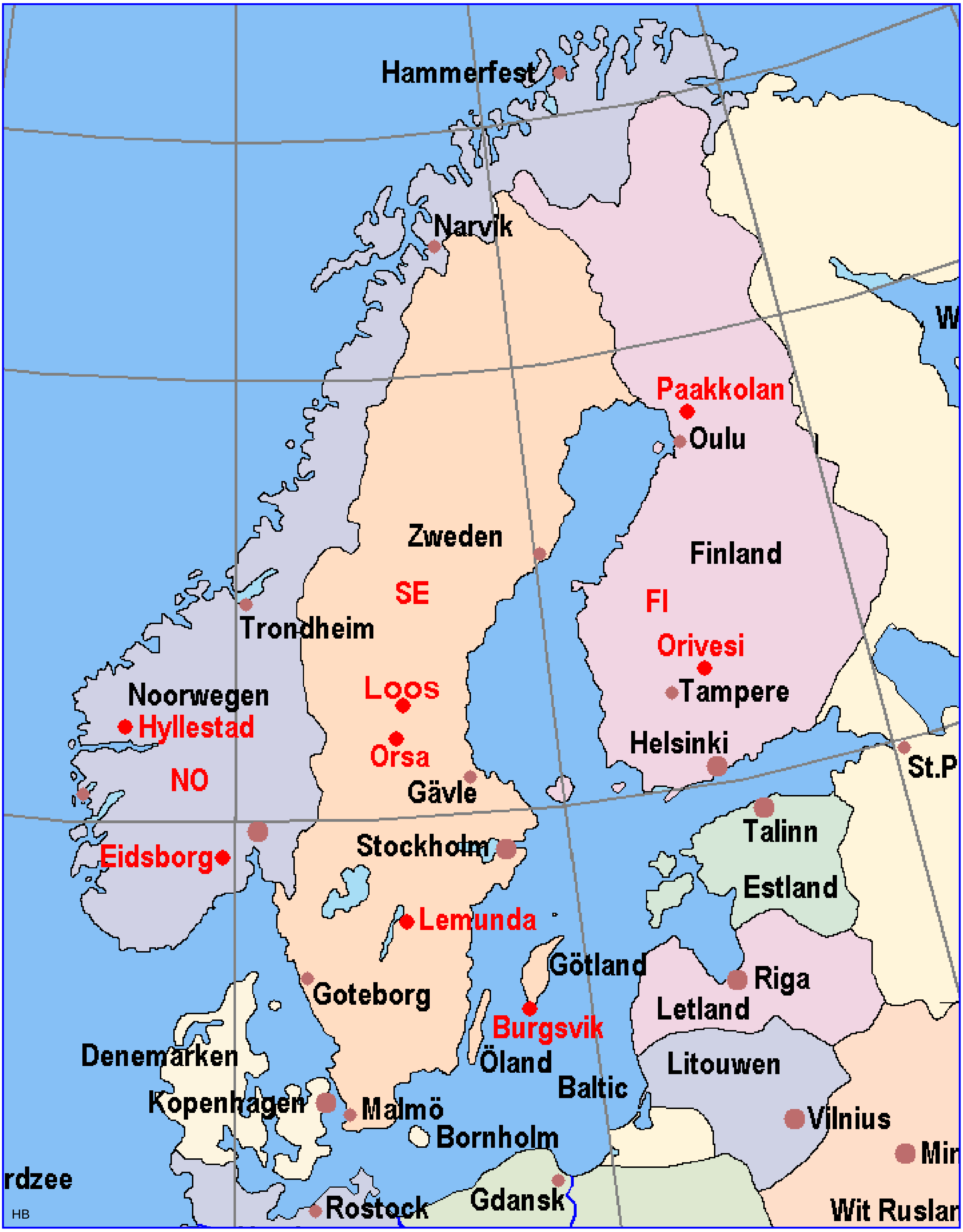

Piet


HB


Piet


Piet

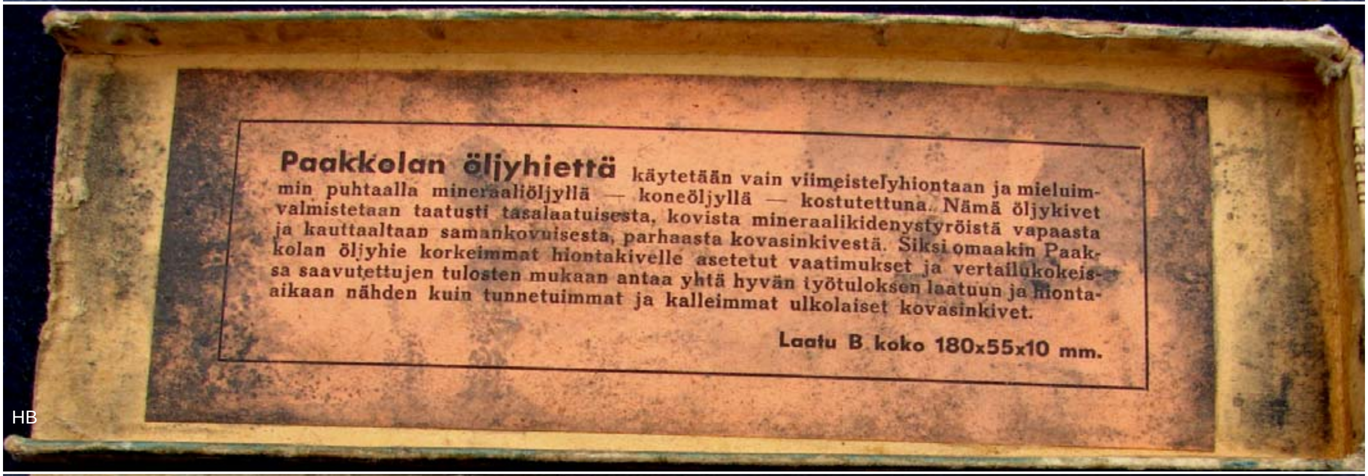
Viking Scandinavia FI, NO en SE



Fi Suomi Paakkolan öljyhiettä

Present from Ilkka Tuomaala







Text on the label
Paakkolan öljyhiettä käytetään vain vilmeistelyhiontaan ja mieluimmin puhtaalla mineralöljyllä - koneöljyllä - kostutettuna. Nämä öljykivet valmisttetaan taatusti tasalaatuisesta, kovista meneraalikidenystyöistä vapaasta ja kauttaaltaan samankovuisesta, parhaasta kovasinkivesta. Siksi omaakin paakolan öljyhie korkemmat hiontakivelle asettetut vaatimukset ja vertailukokeissa saavutettujen Tulosten mukaan antaa yhtä hyvan työtuloksen laatun ja hionta-aikaan nähden kuin tunnetuimmat ja kalleimmat ulkolaiset kaovasinkivet. Laatu B koko 180x55x10 mm.

English translation
The Finnish text says it is to be used wet, ideally with a pure mineral oil, such as fine machine oil. It is guaranteed to be of consistent quality, free from hard inclusions and instead utterly homogeneous. Experiments showed it can be compared with the best and most expensive hones in terms of quality and performance when it comes to wearing down speed. (Thanks to Oldengaerde)

Dutch text
De Finse tekst zegt: nat gebruiken, idealiter met een pure minerale olie, zoals een fijne machine olie. De constante kwaliteit wordt gegarandeerd en is vrij van harde insluitingen en in plaats daarvan volkomen homogeen. Experimenten toonden aan dat het de vergelijking met de beste en duurste hones kan doorstaan in termen van kwaliteit en prestaties en op het gebied van slijtage snelheid. (Met dank aan Oldengaerde.)

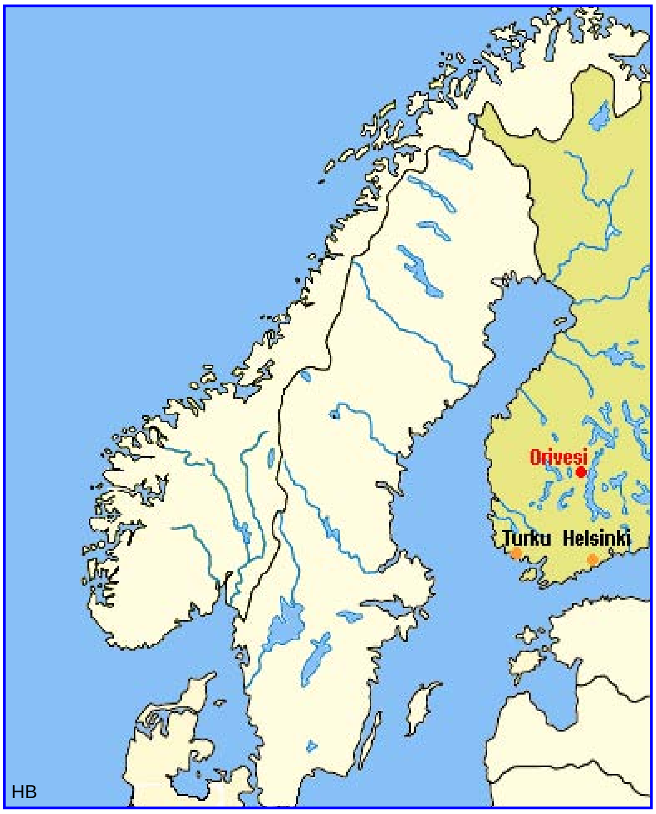
FI Suomi Wästikivi Oy

Thanks to Ilka Tuomaala, owner Wästikivi Oy in Orivesi

Collection Ilkka Tuomaala



A 300 year old Wästikivi



The company



After 3 years of sailing and 30 years police in 1998 Ilkka Veli Erik Tuomaala and his wife Sari Tuomaala have established the company Wästikivi Oy in Orivesi to sell traditional whetstones and thus contribute to their livelihood.
It arose from the interest Ilkka Tuomaala developed for the slate won in the village Wästilä in the municipality Langelmäki. This slate is a kind of phyllite. Ilkka has since developed as an expert in this field. At first it was the intention to sell the stone from the quarry as natural stone for garden paths. At one point there was an old man who told him that it was a sin to sell the grindstone material as garden path pavement.

After some experimentation Ilkka made the first whetstones and started to buy - and by doing so rescuing - old machines.
At first he had tested a few stones by professional persons who use whetstones like carpenters and cooks. The stone was received very positively and the sector has encouraged him to continue making these whetstones.
From 18 to 27 January 2008 Ilkka participated in the "International Green Week" in Berlin, along with others from Finland in the section "Food from Finland".
Since than there were sold very many stones in Germany.

History

One of the first Finnish tribes, the Hämiers, already used the slate stone in the 17th century to sharpen their tools.

Already in 1737 the Swedish researcher Ulrik Rubenschöld told in a letter that the villagers of Längelmäki used the stone as barter with the surrounding municipalities.
In the late 1800's a 4-stones wood pulp mill was built in Vinkiänkoskeen, in which a grinding wheel was mounted for the whetstone production. The whetstones were of a certain size and shape.

It has continued to function until the wars and there were 25 companies involved in the extraction and production process. It had a major impact on employment. Gradually the industrial production came to an end with the upcoming of the factory fabricated grindstones and because of the expensive production process, in the end the activity has died completely.



In 1994 Lauri Heinonen made an inventory of the currently available material, about making whetstones in Längelmäki and interviewed local residents.

The area
The slate bench runs from lake Vähä Löytän to Orivesi. The best quality of these two billion years old stone is found in the forests of Wästilä and there are no written sources known about when the good qualities of this phyllite were first recognized. It is easy to split and yet capable of grinding tool steel.

Ilkka as a last whetstone maker is responsible for winning the stone and he uses the techniques that were used by his forefathers complemented with modern machinery.
For centuries, the stone was split with hammer and chisel. The slate, and winning the stone has been one of the sources of income for residents of Wästilä.
The small area had 20 owners who sold the stones under their own logo. An example:





This is Prima Genuine „Finnish Pond" Schythe Stone. It will give a sharp, keen edge. The grit, being in layers or rills, wears off without glazing. Better when used with water by which we they sharpen still better. It is very strong. Not anywhere has there been offered a stone so well adapted for sharpening Scythes. Hundred years test and use of these Stones has proved them the best in the world for Edge Tools. This stone is warranted to give satisfaction.
CAUTION. — Be sure you get Prima GENUINE STONE OF FIRST QUALITY, with Snake Mark as above. Shall not be mixed with made-up stones of Carborundum, emery sand etc. which spoil the edge.

Dies ist Prima echter „Finnish Pond" Sensenstein. Er besitzt scharfes, schneidiges Korn, und dadurch dass der Stein schieferartig geformt ist, [illegible] Prima echte Sensensteine, mit obenstehender Snake Marke und verwechsle selbige nicht mit künstlichen Herstellungen aus Carborundum, Schmirgel, Sand und dergleichen, welche die Sneiden [illegible].



In English is written:
This is Prima Genuine "Finnisch Pond" Scythe stone. It will give a sharp, keen edge. The grit, being in layers or rifts, wears off without glazing. Better where used with water, by which use they sharpen still better. It is very strong. Not anywhere has there been offered a stone so well adapted for sharpening Scythes. Hundred years test and use of these stones has provided them the best in the world for Edge Tools. This stone is warranted to give satisfaction. CAUTION - Be shure yon get prima GENUINE STONE OF FIRST QUALITY, witch Snake Mark as above. Shall not be mixed with made-up stones of carborundum, emery, sand etc. which spoil the edge.

The old grinding mill
At the river Västilänjoki still is an old grinding mill. The woodwork for supplying and draining the water is no longer visible. However the content, machines and tools of the mill are preserved because the housing is hermetically sealed.



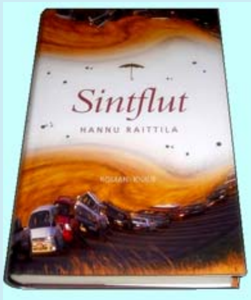
In the foreground is visible that waste was thrown out of the window.





Interlude
Hannu Raittila, born in 1956, is known as one of the most important and interesting writers of Finland.
In his book "Flood" is an interesting verse about a grinding mill. It begins as follows:

"Better than any other" on the packaging was stuck a label together with a transport order. The crate was on its way to Sambia, already for 20 years according to the date.
The label next to the advertising the quality of the product shows a picture of a turtle.
"FINNISH POND, SCYTHE STONE." I took a whetstone, a dark and smooth sample in my hand. Several crates were stacked together. With templates to different destinations had been painted on the wood: Yokohama, Buenos Aires, Cairo ...
The rectangular whetstone was comfortably in the hand, its sides were rounded. The merchant of the parish had told that cooks thought that phyllite was the best stone to sharpen kitchen knives.
In the workshop I loosened the brake of the grinding table on which the axis passing through the mill chamber was and both the grinding table and the saw started moving. The turning of a grinding table weighing one ton made so much noise that the splashing of the mill wheel could not be heard.



For the whole story you better read the book " Sintflut ".
Title: Sintflut. Author: Raittila, Hannu. Media Type: Book Binding: Paperback. Language: German. Number of pages: 316 Publisher: btb. Publication Date: 2009-02-05. NUR: literary fiction. Collection: btb Bd.73779. Weight: 310 gr. ISBN/ISBN13: 9783442737796 Internal number: 11031907 Read Taste: http://bilder.buecher.de/zusatz/23/23809/23809112_lese_1.pdf

A visit to the quarry's
There are very many quarry's present in the area. The first thing we went to see was the quarry of Ilkka where he won the Wastikivi.







Some old closed quarrys











The Wasitkivi

The phyllite won in Wästilä is a metamorphic clay. See Part 2 page 10 Step 6. According to tradition the stone is made by the Finnish god Ukko Ylijumala. In Germany Ukko Ylijumala is known as the Holy Roland, the patron saint of the stone workers.





This phyllite has very small and thereby fine mica particles making the surface structure shine in the transverse direction and shows a light grey colour (clay-mica-schist). The main minerals are quartz, feldspar and mica. The fineness of quartz particles determine the grinding quality. The shape of the quartz particles determines the grip on the metal and the bonding between the quartz grains determines whether or not the stone goes on grinding well.
The quality of the stone varies a lot so it is necessary that the whetstone maker judges every stone in his hand for quality.
The abrasive properties of the stone in 2007 are tested at the Technical University of Tampere. The German magazine "Messer Magazin" tested the Wastikivi whetstone in the March edition of 2008 with great success.
The stories can be read on the website. The stone is sold under the name Wästikivi Oy.
http://www.wastikivi.fi/english.html







"Pysy terävänä" (keep them sharp)
wishes you the whetstone maker from Orivesi.

Wästikivi Oy
Ruovedenkuja 3 35300 ORIVESI
FINLAND
tel./fax +358 (0) 3 334 6060
Website: www.wastikivi.fi
E-mail: wastikivi@wastikivi.fi

Old labels

With 400 years of production and 20 companies there have been many labels. Showing all variations is not possible. Therefor the time in Finland was too short therefore.
A few I will show you. There are about 15 known labels. The case is however, that sometimes only one word is different. This then indicates to the length.
So No 0 is 20 cm, no 1 = 24 cm and extra = 26 cm long.



Jaakolan hiomo, 26 cm



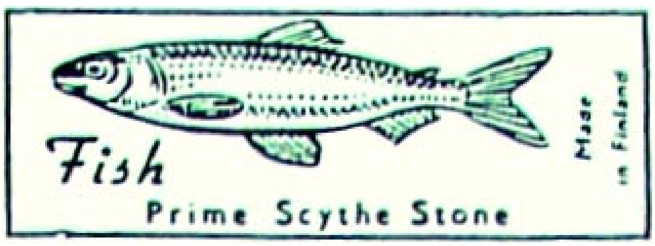
Poukan alkuperäis etiketti (palkintomerkein)



Wm Sandberg Oy Erikoislähetys, 24 cm



Wm Sandberg, 24 cm Alasen tunnskuviolla



Jaakolan hiomo 22 cm, Valtameri lähetykset



The company is unknown to me.

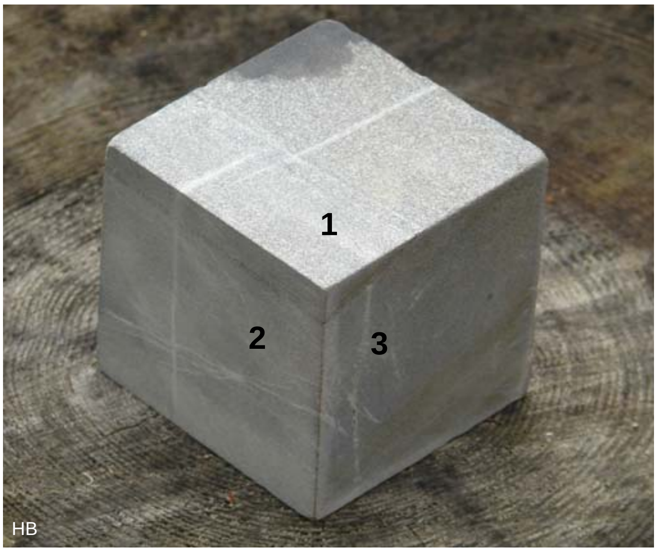


This company is unknown to me. Jaakkolan? The label is made in the 2nd world war for Germany and the satellite states. This stone has an interesting leaflet in Dutch, translated:

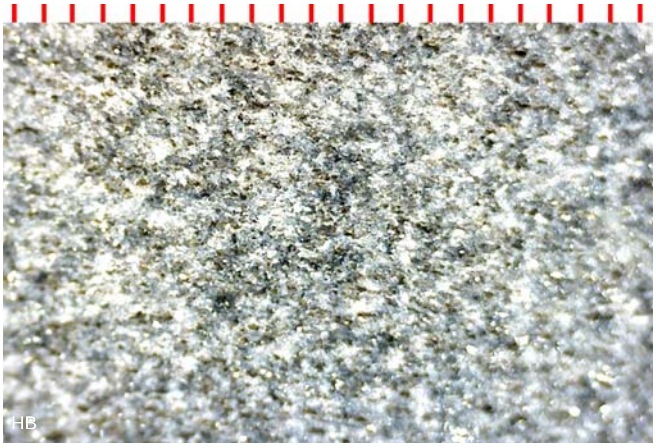
This is a great real scythe whetstone, brand "BLITZ". This stone has a sharp core and although the shape of the stone looks like slate it wears without glaze and it can be used for the whetting of scythes, sickles, KNIVES AND ALL SUCH CUTTING TOOLS. To use make the stone wet, in this way its operation is increased. Until now there has been no stone, so suited to SHARPEN SCYTHES as these fine whetstone, brand "BLITZ". We guarantee its quality.

WARNING: When purchasing these stones avoid worthless counterfeiting. Ask for the best real Scythe Whetstone, brand "BLITZ". Artificially manufactured stone (from carborundum abrasive, sand, etc.) spoil the cut.

Stone with three types of fineness



Phyllite is leafy (phìllon, griech. = Leaf). This indicates that the stone has a splitting direction. This has the consequence that there are three possibilities for grinding.
1. The shiny part is best suited for grinding.
2. Angled at and parallel to the leafy direction the colour is grey. The grinding operation is finer on this side.
3. The front side has an even finer grinding operation and is suitable for polishing.



1 Grinding k 1000. The scale is 0.5 mm.



2 Whetting k 3000. The scale is 0.5 mm.

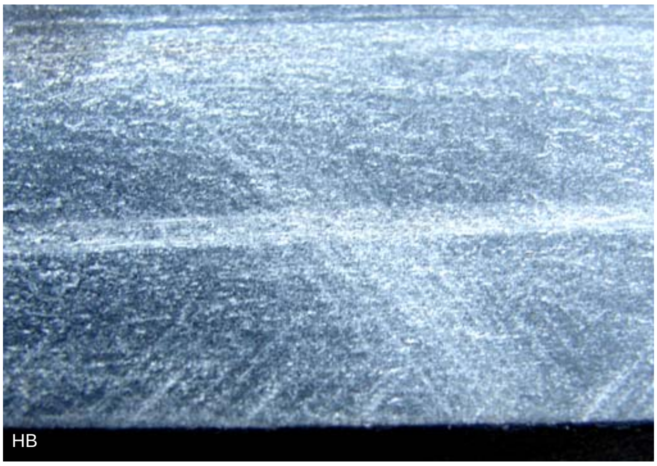


3 Polishing k 5000. The scale is 0.5 mm.

The blue Orivesi Kuntaliitoskivi stone (Yliskylä quarry)
This stone is not constant in composition. Even in One whetstone the differences can be substantial.
The binding of the light grey part is 500 grams and may be called soft. It will grind very good. The dark area is 1500 grams and is suitable for polishing.
The values are measured with the Sclerometer.
These values are quite far apart within an inch.



Putting into operation



Before using, it is important to flatten the stone surfaces and get rid of cutting and grinding marks.
How you can best do this best you can read in Part 2 Section 5f on page 37-39.
I often hear from users that a newly purchased stone performs worse than expected. Actually this is logical.

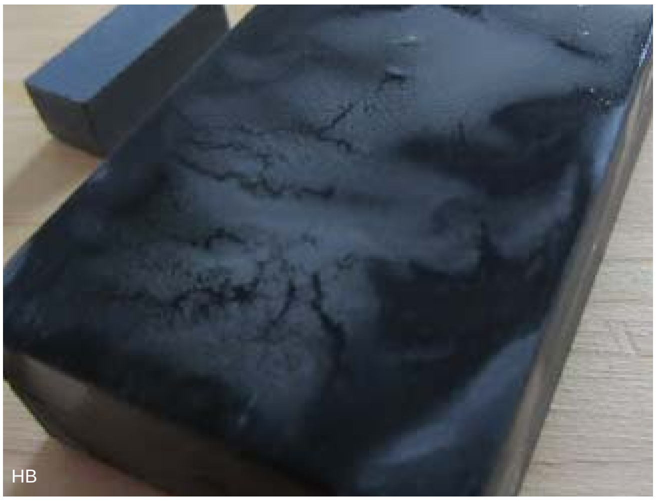


The rough sawn stones are finished on a diamond sanding disc. Thereby the peaks of the quartz particles were flattened and than they cannot participate in the grinding process.



Kuntaliitoskivi could be called two-sided stone, which is connected to the Orivesi Västilä stone and glued together

By using a slurry stone on the surface to edit, the blunt particles break out and there will come sharp particles of quartz to the surface. Preferably use a slurry stone of the same kind (Wastikivi- grey and Kuntaliitoskivi - blue) as the corresponding whetstone.
For Wastikivi a Nagura is much too soft. The resulting slurry is then of the Nagura, not of the Wastikivi and the surface of the stone will not open.



Making a slurry on a Wastikivi gives a remarkable improvement of the grinding result. You can perfectly grind with the slurry which gives a dull surface to the cut. If you want a high gloss cut than make the last strokes under running water.



By putting a finger in the slurry and dabbing it on a piece of white paper you can observe after drying the distribution of the quartz particles under the microscope.

Grain

In natural stone it is very difficult if not impossible to speak of a grain. But we can indicate to which it matches to our experience.
For the soft Wastikivi it is about 1000 and for the hard Kuntaliitoskivi it is about 4000. It is rather arbitrary as this may differ per mm.
The result depends strongly on the applied pressure.
Much pressure gives the impression of a coarse grain and little pressure gives the impression of a finisher.
The blue Kuntaliitoskivi from Orivesi is very difficult to flatten. During the trip I tried to flatten the stone surface and remove the saw marks with a Polish carborundum stone. The Carbo stone was more damaged than the Kuntaliitoskivi stone. I flattened the stone at home on the bicycle wheel with carborundum k 220.

Experiment

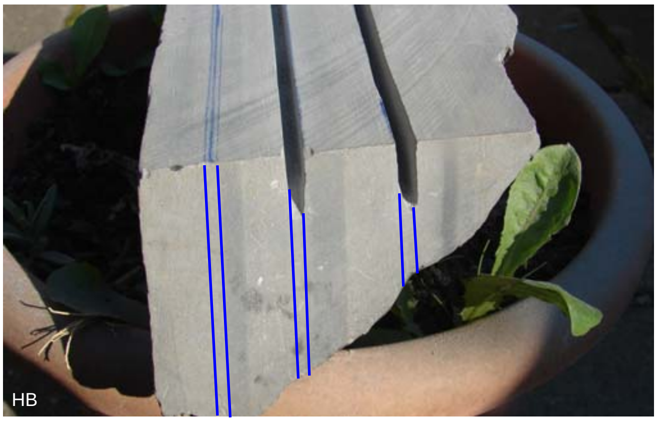
We have seen that the dark bands are harder than the lighter ones. During use, the wear of the softer parts is greater than of the dark parts, and it is possible that a razor does not stay flat.

Therefore, we have taken a large piece of rock from Orivesi to cut a natural combo out of it with on one side the dark and on the other side the lighter stone. It's a little hard to cut but we have tried and succeeded.



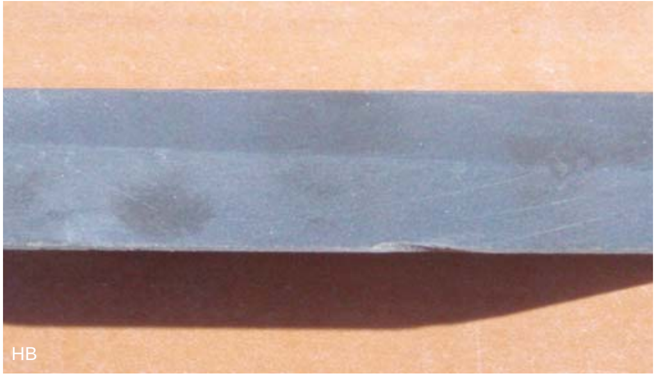
From this chunk Orivesi Kuntaliitoskivi a natural combination stone is cut.











After cutting and grinding it it was like there was a at the surface of the water a layer of aluminium paint because of the fine glimmers of the stone.

The grinding of the dark layer took much longer time than the lighter underside. Therefore, the hardness of the binding (matrix) in the stone is measured once again. The dark layer indeed is 3 times harder (1500 grams) than the lighter.

The results obtained by polishing a cut goes beyond expectations. A beautiful high gloss cut is the result and is comparable to a good Dragon Tonque or Yellow Lake.

It is unfortunate that this is currently the only stone that is cut in this way.

Some stones



3 Wastikivi scythe stones of which the lower two are of age. The top one with birch bark sheath is new.


Wastikivi
with Visakoivu box (Curly birch Betula pendula var. Carelica)
Wastikivi 3x
Kuntaliitoskivi
Wastikivi
Kuntaliitoskivi
Wastikivi
Wastikivi
Kuntaliitoskivi
Kuntaliitoskivi
Wastikivi
Kuntaliitoskivi


HB

NO Norway - Eidsborg Ragstone





Honing stones from Eidsborg have been for over 1000 years a export article for Tokke. Norwegian Viking whetstones from Eidsborg were an effective weapon to throw, as the historical sagas tell us. See the stories about Hungrir on the Internet. Later on they were used for peaceful purposes.

They were transported in rowing boats (see intermezzo Turid Fiskarbek) through the Telemark Canal to Skien, or on horseback across the ice to the coast, to be sent abroad, where they were sold at a good price. In this way, the quarries in Eidsborg supplied good whetstones to the timber industry and to professionals at home and abroad.
Ragstone is a name, used by architectural writers, given to structures carried out with thin strips of stone.

History
The Eidsborg sharpening stone production goes back far in time. Since 700 AD. people already are active in Eidsborg in the production of sharpening stones. From the Iron Age tools were made of iron, and this tools obviously had to be sharpened. The whetstone from Eidsborg consists of a quartz-mica schist.

During the grinding the quartz grains let go, which creates a very fine abrasive. The whetstone from Eidsborg is very good. The large-scale quarying began in about 700 BC, but there are known examples from the Iron Age.

KLÅSTAD SHIP.
Trading ship from the time of the Vikings or Knarr, found in Klåstad, near Kaupang, in the south-west of Norway in 1893. The ship of about 18 meters in length, was excavated in 1970 and dated by dendrochronology at approximately 990.
The ship's cargo consisted of shale from a quarry in Eidsborg, Telemark, Norway, cut in rough blocks to use as whetstones.

Across Europe, archaeologists have found the sharpening stone in excavations of the Middle Ages and the Viking Age.



In Eidsborg two different qualities of stone were traded: hard and soft rock. The hard stone was exported abroad, while in Scandinavia they preferred to use the soft stone, because this stone suited better to the hard steel that was used there.

The grinding stone trade and its use is concentrated in the period of Scandinavian-English interaction (9th-15th century AD) and two metamorphic petrological types were used, viz the 'Norwegian Ragstone "(NR) a quartz-mica schist, and the" Purple Phyllite "(PP) a quartz-mica Phyllite.
The stones are found all over Europe. Petrology connects the NR-type with the known quarries in Eidsborg, southern Norway, and this is proven by isotopic testing.

The second species remains a mystery, as it cannot be indicated where it was found. In many reports this is repeated. The second type probably is burned Eidsborg stone. In the Telemark Museum in Eidsborg these stones can be seen. The blue version is the original material and the brown to purple version is burned Eidsborg.
It is known that the Eidsborg whetstones sometimes were produced with a burnt surface, with a much lighter gray colour and a smooth surface. The mineral grains let go more easily and improve the sharpening (Lijfland 1992).
See interlude "Burnt Eidsborg".



The whetstone material

The geological composition of the mountains around Eidsborg is particular. It is a quartz-mica schist with such a fine quartz grain that it is particularly suitable for grinding. The rock is located east of the farms Groven, Lofthus and Quaslungen in the municipality of Eidsborg north of the western end of the elongated lake Bandak in the Telemark region.



The rock is a blue-gray quartz schist which runs from NNE to SSW, and the layers are upright. There are quartz veins throughout and occasionally there are caves that make winning the stone easy.
The rupture directions of the rock are quite at right angles what simplifies the splitting.

Of this material it is easy to split square or rectangular bars. For small sizes of a few centimetres, it is possible to split a rod up to a meter long. When cleaving it is noticeable that there is sometimes needed a gap of one inch to loosen a strip. The elasticity is mainly at present when the stone is won recently and still holds the original moisture. Unfortunately we could not take these long pieces and we had to settle for shorter parts. Besides the approximately 25 kg of stones we had to carry our geologists hammer, sledge hammer, chisel and crowbar.



Looking at the material perpendicular to the layers with a microscope, then the irregular but rounded sections of quartz grains are recognizable. Sometimes these granules are composed of several pieces. The grains are separated by muscovite which is perpendicularly intersected. The layers are not easily recognizable but the glimmer is visible under undulating layers running parallel to the layer direction.



A longitudinal section shows something quite different. The quartz grains are shaped more or less elongated and glimmer layers are visible as parallel but very irregular stripes.
There is a substantial difference in smoothness between the wide longitudinal direction and the narrow side.





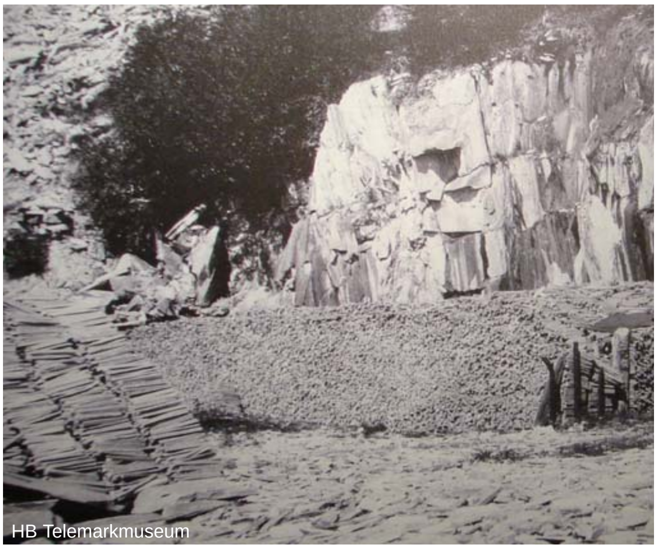
HB

This also explains why the used ancient stones have such a peculiar shape. With the long, wide side is sharpened, the long narrow side is used for polishing.

From rock to hone

There used to be several ways to get the material out of the mountains. Previously a lot of fire was used. By heating the stone and then rapidly cooling with water it started to crackle and large boulders could be broken loose with wedges. By filling the cracks in winter with water and letting this freeze, the expansion of the ice was used to loosen pieces of stone.
Later, gunpowder was used to loosen the boulders. Dynamite could not be used because that caused too much damage. For most people the work in the quarry took place under the open sky. After drilling holes and the subsequent blast, the boulders were divided into usable sizes.

This was the responsibility of the 'pikkarane' (foreman), for it was he who decided, whether the stones could be used or not.
It is said that only 35% could be used.



HB Telemarkmuseum

The impression is that the format was more decisive than the quality. We have paid much attention to this subject. We have tested a lot of stones for hardness, fineness and particle size and have found that the stones were quite uniform.
We have also sorted according to size to attain the well-known ISO format of 20 x 5 x 2 cm.

Industrialization



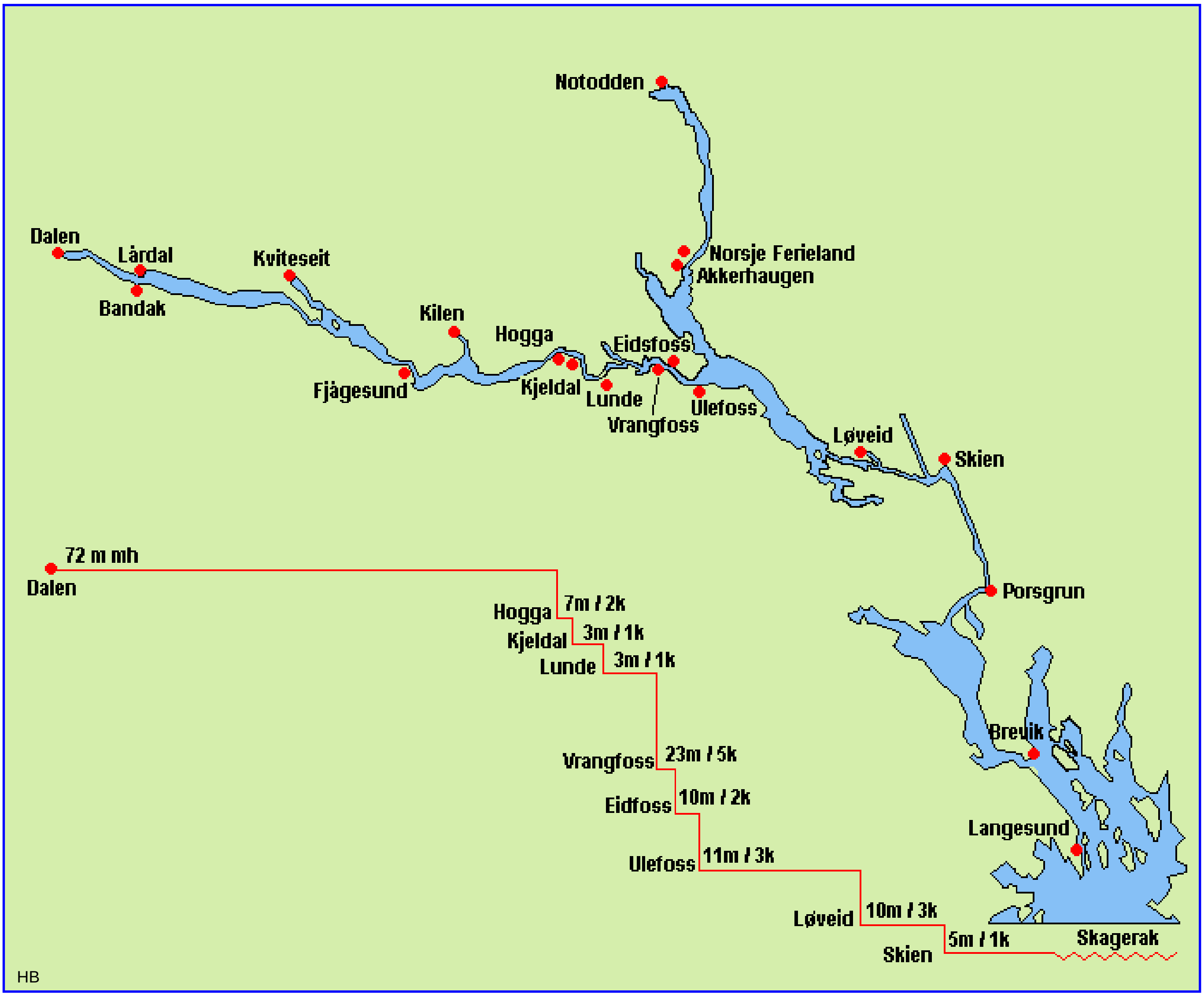
HB Telemarkmuseum

In the beginning the export was made up of rough cut stones, but in 1879 they began finishing the stones.
The Norrøna Factories produced approximately 25 million rough Eidsborg whetstones in the period 1880-1950.



HB at the Telemarkmuseum

When in 1880 the Norrøna factory took over the industry, the activities were structured better and more systematically, therefore the volume of production increased enormously. Industrialization and the realization of the Telemark Canal also made a an important contribution to this. When they could make use of gunpowder and machines, the company changed.
From only export of rough sharpening stone, they turned to the sale of polished stone. The transport became easier by loading the sharpening stone on the boat in Dalen and bring it without recharging to Skien.
"Horse and carriage" was eventually replaced by the truck.
Norrøna produced in Eidsborg until 1950.



The combination of competition from artificial sharpening stones, and falling demand due to the mechanization of agriculture, made it difficult to keep the company afloat. Despite that, the Eidsborg sharpening stone still was wanted and a partial production was continued until the 1970s.

Transportation to Skien

The transport from the quarry at a height of 600 meters above sea level, to Skien, goes over a distance of 120 km mainly over lakes, rivers and inclines.
The first part was the transport to Dalen, what was called 'Lastein dock' a name derived from the whetstone trade.
The stones were stacked in 'Piles' (called 'la') and in this way were ready for further transport through the canal.


Unknown

In the story about Turid Fiskarbekk you can read that the transport not always was a joy. There was an attempt to do the transport by horse and carriage but because of the landscape that also was a struggle.
Easier it was to let them take down by the men who brought down the felled trees as rafts. Rapids and waterfalls made it necessary to transship the stone several times.

On the internet is a school film

http://www.nrk.no/skole/klippdetalj?topic=nrk:klipp/863185
where they transport the stones with horses.

A big improvement was what we now call the Telemark Canal. It consists of 2 parts: the Norsjø-Skien Canal and the Bandak-Norsjø Canal. The Norsjø-Skien was completed in 1861 and Bandak-Norsjø Canal was opened 31 years later. The Bandak-Norsjø connected the Norsjø and Dalen through the western lakes.

The Bandak-Norsjø Canal is also called Bandak Canal and was built between 1887 and 1892. The 8 locks in this Canal together have 18 rooms. The distance from Skien to Dalen is 105 kilometers with a level difference of 72 meters. There are 14 locks build in 17 kilometres between Ulefos and Strengen with a drop of 57 meters.
The locks at the Vrangfoss waterfall make the biggest impression.

Walk



Want to know more about the history of the grinding stone, and you like to visit a quarry?
In early days there were 20 quarries but there is only one that features information.



In the spring of 2011, a trail was opened that can be followed to the quarry. The walk through the impressive landscape follows the route that the workers of the quarry used to go. Along this route you will find information boards about the historical sights.



The walk starts at the West-Telemark Museum Eidsborg. The trip takes about 2 hours and is also suitable for the inexperienced hiker. Along the way, you can also take a break at one of the picnic areas.

The Telemark Museum





The façade and the desk of the Telemark Museum are made of Eidsborg ragstones.



There is made a beautiful representation of the history of Eidsborg whetstone.



A rough hewn stone ready for transport.



Many original parts are there on display and this makes clear the harsh conditions under which the workers produced the stones.

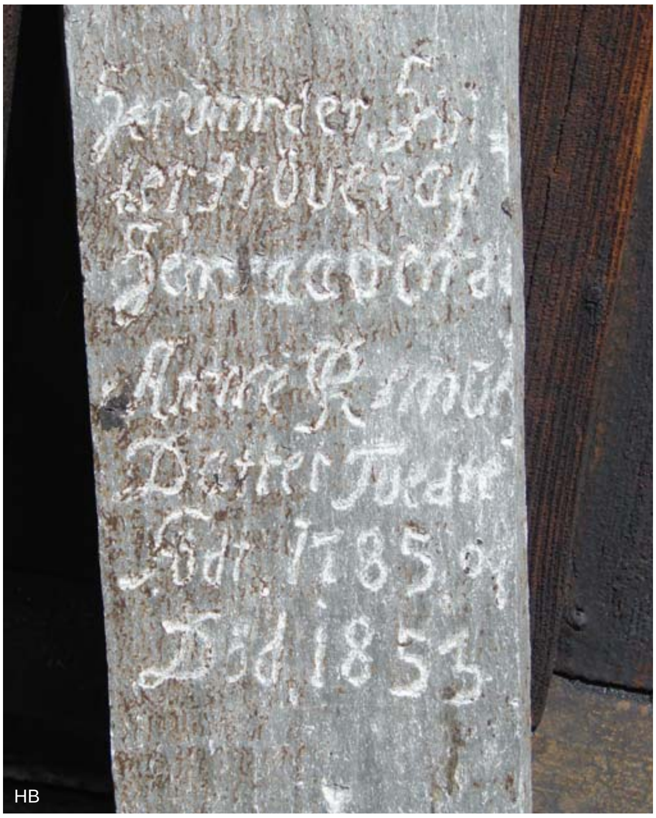








Stavkirke Eidsborg. The foundation of the stavkirke in Eidsborg is also made of Eidsborg schist. The material was also used for tombstones.



NO Norway “The Vikings”

The name Vikings is derived from the old Norwegian Vik, meaning bay or inlet. So Viking actually means: residents of the inlets.



The Viking Age was the period from 800 to 1050 BC.
In that period there were dramatic changes taking place in the area that we call Europe. The inhabitants of Scandinavia stormed the shores and terrorized the local population that was not equipped for warfare and could not defend themselves against the tactics of the Vikings. The contact with the Vikings was not new, and from archaeological material it can be shown that these activities already occurred before the year zero.

The Vikings were indeed raiders but were also traders whose economic network covered a huge area from Iraq to Canada. They were democrats who founded the first parliament in the world in England while there still prevailed a feudal government.

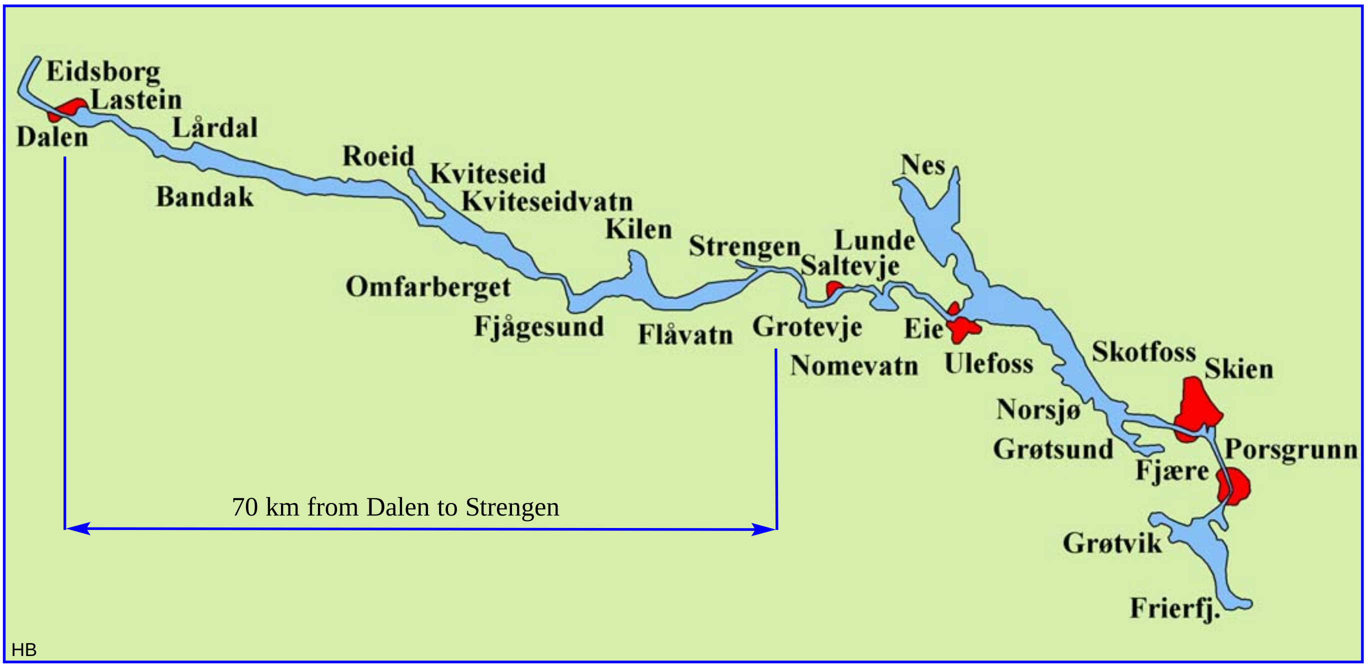
In fact, most blue-eyed, blond or red-haired people from Scandinavia, were primarily farmers and shepherds.
They grew corn and vegetables in summer and took care of their livestock such as cows, goats, sheep and pigs.
Like the Greek and Romans, they have left many terms and names in the areas they visited, such as the names Wodan, Thor and Freya which we still find in the weekdays Wednesday, Thursday and Friday. Even the word starboard we owe to.

Craft practitioners
They were artisan craftsmen and master smiths in dealing with gold, silver and bronze. Working wood which demands perfectly sharpened tools, stood in high esteem. The remains can be found in various museums. This skill came in handy during their voyages of discovery.





NO Norway Turid Fiskarbekk



HB

Inextricably the name of Turid Fiskarbekk is connected to the Eidsborg whetstones. It is a story that has been passed down orally and it is not sure that everything exactly is right but that is not necessary for the understanding of history.
Ingebjørg Tormodsdotter was born in 1735 in the village of Lårdal in Telemark, Norway.
Together with Oystein Tommesson Runningen she had five children. The youngest was a girl, born in 1771 and was baptized as Turid Oysteinsdotter Runningen.
She grew up in Brunkeberg in the town of Kviteseid what lies at some distance from Lårdal. Like all other children usually do, she will have visited her grandmother, who still lived in Lårdal.

In Lårdal she must have seen the many whetstones coming from the Kjonnstoybruddet quarry. The stones were loaded aboard rowing boats, and occasionally larger boats, on the quay of the elongated lake Bandak for the trip to Skien. Skien is a port at the sea, from where they were transported all over the known world.


HB

In 1797, at the age of 26, Turid married Olav Smereson Fiskarbekk and went to live on Olaf Fiskarbekk's farm on the north shore of the lake Fåvann. Together they had eight children, four of which grew up.

On this farm too, like everywhere in Norway, there is but a thin layer of soil present on the rocks and the soil is also full of stones. Even so, many generations Fiskarbekk lived there before Turid came.
During the time that Turid lived there, she has done much to reclaim new land with no tools other than her own hands. This part still is called Turids field.


http://en.wikipedia.org/wiki/File:Norwegian_pram.jpg

The Fiskarbekk farm on the shore of Lake Fåvann was very isolated, actually without usable roads. Never the less, the farm was situated central. Fiskarbekk was on a favorable spot on the main transport route between the upper and the lower part of Telemark.
Turid lived on the continuous waterway of about 70 km from Dalen to Strengen.
Turid was a "kjempekvinne" (female fighter or rider) in the local stories.
She had this nickname not only because she did a man's job on the farm. Also because she did not hasitate to pull a bull from the swamp, or if it fell out, to disassemble a few fighters and teaching them a lesson by clashing them with their heads together.



The quay at Dalen. Not directly a fun sailing area with strong wind!

Besides the work on the farm she transported with a rowing boat whetstones on the lakes Bandak and Flåvann to Strengen. This was in her time the longest continuous waterway without waterfalls or rapids. Especially the transport of whetstones with her rowing boat, still is passed on in the oral traditions, and gave her the nickname "Turid Rowed the Fjords".

Torjus Fjådgesund heard from his father one of these stories about Turid:
Once Turid had collected enough stones in Dalen, in the evening she rowed home in Fiskarbekk and spent the night there. From Fiskarbekk it was another 15 kilometers to Strengen and this part she wanted to take the next day.
In the morning there had come a strong wind and people warned Turid not to go in this bad weather with the heavily loaded boat.

But Turid was fearless and sure that she would make it. Further down the fjord there is a small island, and with the big waves and strong winds, she was not able to sail free. The boat filled and sank with the entire load. Even today you can see the whetstones lying on the bed of the lake near the island, since that time called Pramsteinen (flat bottom boat stones).

Turid lost her husband Olav in 1829 when she was 58 years old. Later she married Aslak Olavsson Øvland from the neighboring settlement of Kilen, he was 31 years younger. The date of their marriage is difficult to trace in the sources, but it must have been in early 1830.
At that time, there was the "America fever" and Turid wanted to emigrate with her husband.

Funded with their savings, perhaps obtained by the transport of whetstones, and income from the labor on the farm, they took passage on a sailing ship to America via England.

Fate had decreeded that Turid experienced for the second time in her life, and now probably it was a much more dramatic, a shipwreck.
The trip ended in a storm in the middle of the English Channel. The boat sank but Turid and Aslak were rescued by a French ship. Alive and destituted of everything they had saved for their new life in America, they were transferred to a French port. Gone was the dream about America, they must have thought. Turid and her husband returned to Fiskarbekk and Lake Flåvann where they remained for the rest of their lives.
Turid died in 1865 at the age of 94.



Burnt Eidsborg - an experiment



During our visit to the Telemark Museum Eidsborg the guide told that Eidsborg whetstones were burned for use on whaling ships.



In the showcase were burned Eidsborg whetstones that were significantly lighter in color. The left one is original.





We wanted to know at what temperature and for how long this happened. No one knew the answer. This fact staid in my mind, and when we were at the quarry I picked up a stone to cut several stones to do some tests.



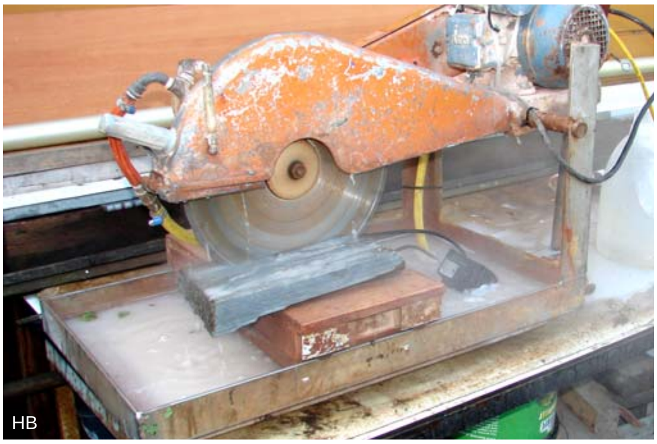




Friend Rob has laid an Eidsborg whetstone onto the barbecue. It clearly shows that the structure has changed. It is a pity the temperature is not known.



This chunk of raw material of 5.5 kilograms is brought with bending knees over a slippery goat path from the quarry to the car.



To get the maximum usable surface out of it is the chunk first was sawn both sides square and then into 3 long strips.



After that the strips are cut into 6 pieces.



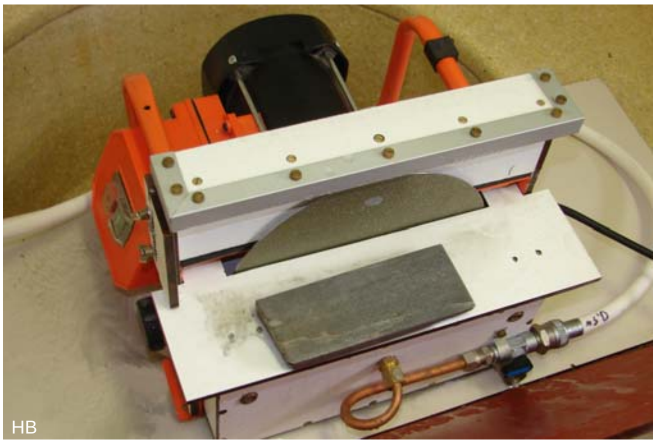
One side of the strips is ground flat to be able to clamp them against a stop which is set at 15 mm thickness. Now strips of 15 mm thick were sawn.





All 11 slices were cut at equal width and length.

This resulted in 11 slices with a width of 5.5 cm and a length of approximately 14 cm.



With the "Nickel plated diamond grinder" all sharp edges were rounded. The disc is mounted on a converted tile saw. The spray water is collected in a Trespa box.



To keep the stones apart while burning, so they can be traced and keep good records, they are marked in a heat resistant manner.







In a large oven stones are annealed.



Clearly discolored at 1100 degrees Celsius.



Started at 400 ° C and stopped at 1100 ° C.

Whetstone criteria
For whetstones are a few criteria that matter en: The type of mineral, the shape and size of the grains and the matrix also called bond.

Together they form the quality of the stone. The size of the grains is tested most, and can be read from the scratch pattern. During our study trip I test it with the back of a teaspoon. In this way it is to compared with a standard stone. In sandstone usually are spherical grains and with shale (silt and mud) there are usually flattened and rounded plates. To this you can make little change. What we can do is changing the binding a little bit. Almost all usable whetstones have undergone a natural transformation by the tectonic activity.

Formed layers went into the depths, came under pressure and dependent on temperature, they were more or less baked. By this transformation stones arose with a variable binding. This binding can be tested with a carbide scriber on a modern scale to cause a standard scratch. I use therefor 0.3mm,what can be read with a "thread counter" which is used to count the number of textile yarns per mm.
It takes some practice but quickly you will get the feeling for it. The necessary test force exerted on the scriber ranges from 75 grams to more than 3000 grams (Llyn Idwal and hard Arkansas).

Glowing
A friendly relationship was so kind to test the stones one by one by glowing in a furnace. Every day,heating up one stone to the desired temperature for 1 hour, and then cooling down in the night. In the morning the stone was still about 100 ° C. The colors go from green through almost white at 1000 ° to brown at 1100 ° C.

Result
The glowing (baking) has a clear effect on the hardness of the bond. The 3 unbaked stones have a hardness of 3000 grams. After baking at 400 ° C the hardness is 2500 grams. At 1000 ° C the maximum is almost reached and the color is nearly white. Upon further heating to 1100 ° C. the stone discolors to brown and the hardness is 1200 grams.
So: annealing or baking has a major influence on the quality of the Eidsborg stone.

The Vikings knew quite what they were doing!

3.3 Preservation conditions of whetstones

In general whetstones preserve very well in the archaeological record though often only as fragments. This fragmentation is, however, considered to have occurred during use of the stone rather than due to deterioration afterwards. Some degree of erosion of the whetstones does, on the other hand, sometimes occur and it predominantly attacks the light grey schist types that are sometimes found with a very fragile or even crumbly surface. It is known from modern times that the Eidsborg whetstones were sometimes produced with a burned surface that made the stones much lighter grey and the surface softer so that the mineral grains would loosen easily and presumably be better for grinding (Livland 1992, 49). A majority of the eroded light grey schist stones of the Eidsborg type in Iceland are found in a condition where burning definitely could be the explanation for their poor preservation, although it is difficult to determine for certain whether the state of the stone is due to intentional burning or erosion factors such water or weathering.

Nevertheless, Askvik has suggested heat/burning as a possible explanation for the only two very fragile pieces of Eidsborg schist from Hofstaðir in Mývatnssveit[31].

From "Whetstones from Viking Age Iceland" pg 31.
Sigrid Cecilie Juel Hansen Oktober 2009.

NO Norway Hyllestad millstone

Introduction





In part 2 chapter 5b "Designations of stone" on page 19, we have shown a flat millstone: a man-made tool, usually made out of stone, with the aim of reducing, grinding, disintegrate and / or crushing of any commodity; after this, it can be processed further into a finished product.
A rectangular version is often mistakenly called grindstone, but also called corn crusher. Probably this stones were used to grind the corn into grits or malt.



In addition to the rectanggular grindstone, there is also a round version which is usually called millstone.
During our visit to Norway, to get hold of an Eidsborg stone, we went to Hylestad where is present a special type of shale.

In the chapter on Coticule we have seen that under special circumstances and if the proper minerals are present in the schist, garnet can be formed. In the schist of Hylestad this is the case and has formed a massive garnet-kyanite-muscovite schist with garnets from 4 to 8 mm.
Due to the high hardness of garnet - 8 on the Mohs scale -, it is very suitable for making millstones.
These can be manual stones, but also stones powered by water.
We wanted to see this material and, if possible, get a sample of the stone.

History
The production of millstones in Hyllestad has dominated the Norwegian millstone market from far before the Viking period (800 -1050 BC), and was based on the easy cutting of stones from shallow quarries in the rock.
A technique that also was used to obtain soap stone bowls in the Iron Age.
A change to a more centralized production started in the 12th century; probably introduced by professional masons connected to the circles of churches and monasteries.
The activity in Hyllestad declined after the Middle Ages, where in 16th century the millstone production in Selbu arose, based on the easier to work and split staurolite-biotite schist.

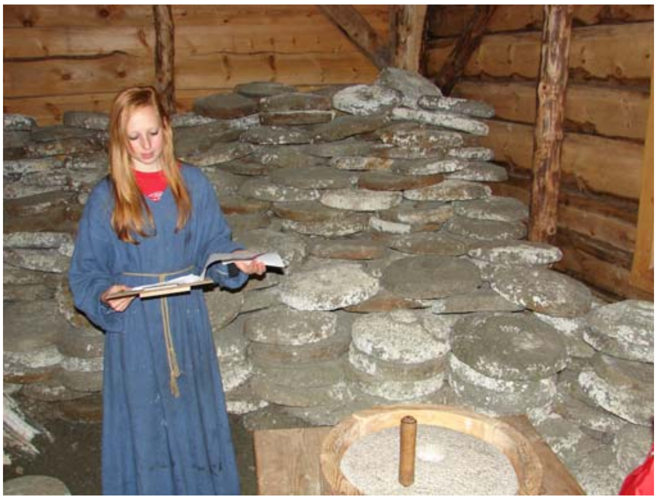


Locations of large millstone quarries in Norway

Museum



The museum is not large, there is a reception room with (of course) a sales counter, there was a (female) blacksmith and flat bread was baked. Also we were toured around the grounds by a very nice girl, she read from a paper the English text about what was to see there.



A load of small millstones from a Danish wreck.

It was for her the first time she was going to do an English tour. We could tell her at certain points much more than she could tell us, but we have restrained.



The production method was rather wasteful: the stone was cut from the ground by cutting a wide trench around in a circle.

When the trench was deep enough, holes were chopped at the bottom, wedges were beaten in the holes and if all went well, the round stone came loose. It often went wrong, so there were several broken stones.



The tailings were very high. In the main building there is an opportunity to chop in the stone yourself, grind corn, bake bread, to forge, braid a string, etc.





Stigting Norsk Kvernsteinsenter6957 Hyllestad.
Tel. 905 51277 | 458 71940
E-mail: post@kvernstein.no www.kvernstein.no

No stone was allowed to be taken from the site, which is why afterwards we went to a stone mason nearby to collect samples.



Mr. Torbjørn Løland is a real ‘stoneman’ with love for his profession and perfect tools.



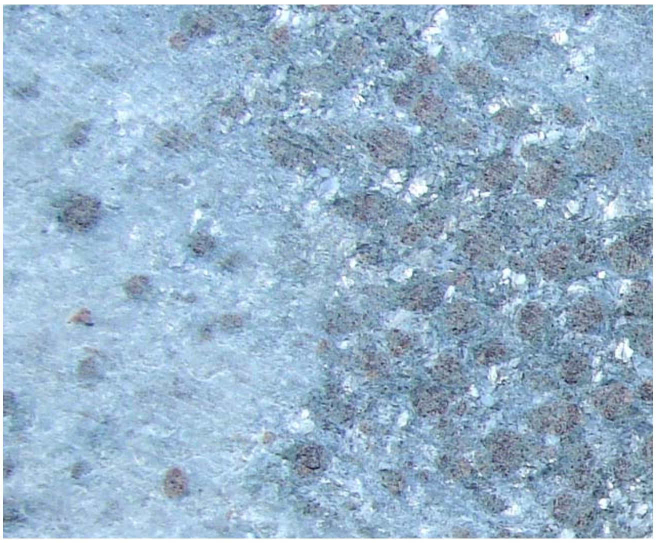
A bench stone is sawn...

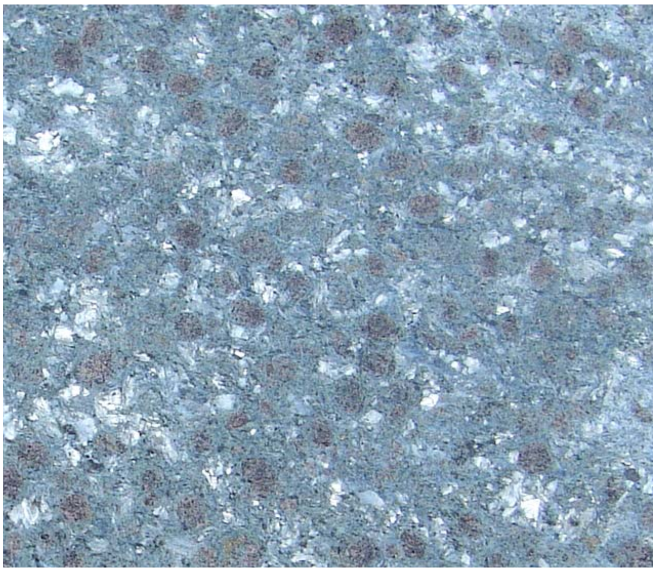


and finished with a water-cooled Flex with 100 grit.

He also had made the jewellery for sale in the museum.
At home, he has a shop with beautiful pieces of work, some highly polished. Address: Torbjørn Løland 6957 Hyllestad.
Tel: +47 577 88380 Mob: +47 952 77 156
Email: torbjorn@aafjordstein.no www.aafjordstein.no









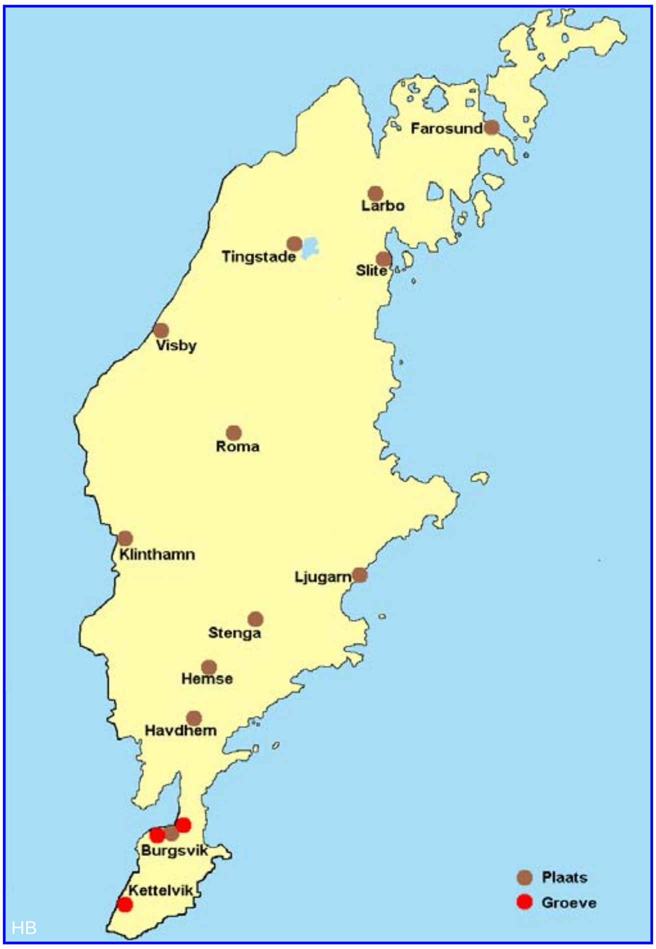
SE Sweden Gotland sandstone.

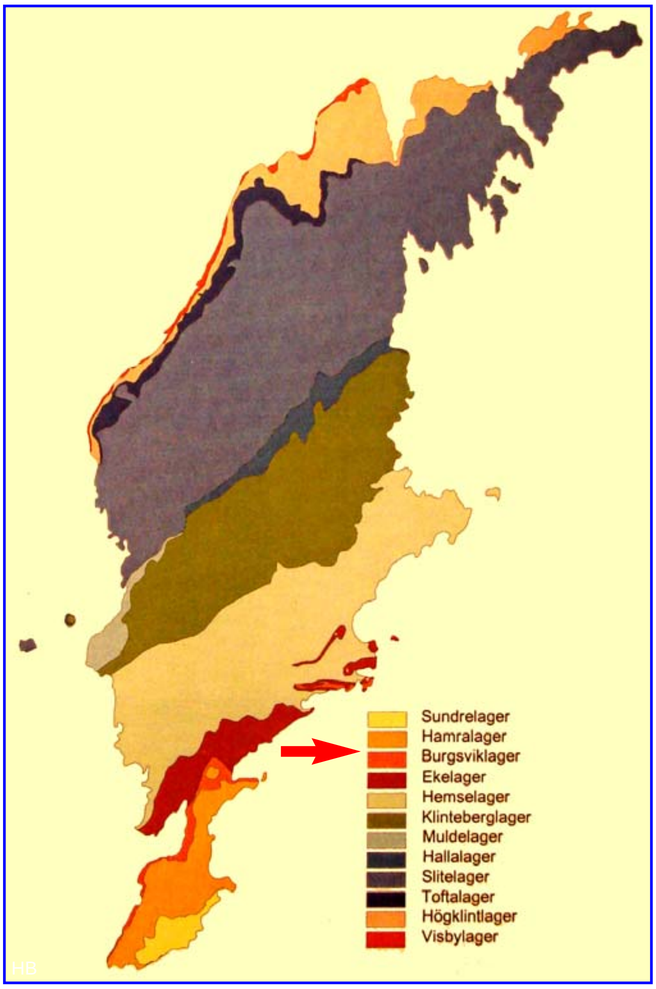


Gotlandse sandstone is widely known for its fine quality. Already in the Stone Age and the Viking period it was used for whetstones, coffins and tombstones.
If used by the Vikings to model and grind their weapons, this is to us a reason to take closer look at this stone.

Whetstone coarse and fine
For grinding and honing of the Gränsfors axes this 'axestone' is used.
The sandstone is mined on the Swedish island of Gotland.
It can be used both wet and dry.
The diameter is 57 mm and it weighs 190 grams.







The occurence in the nature
The stone is found in the Silurian Burgsvik low, close to the coast in the south of Gotland.
The formation is about 35 km long on the west bank of the Storsudret in the municipality Grötlingbo. The stone is also found in Burs and När and in a small area in Fröjel.
This is also in the south of Gotland.
The sandstone is located between layers of limestone and has a thickness of not more than 6 meters. The whole formation is about 50 feet thick. The sandstone is not homogeneous since there are sometimes limestone and clay layers in it. The structure and orientation of the stone indicate that it is formed as sand banks in shallow water close to the coast.

The composition of Gotland sandstone

The Gotland sandstone is a homogeneous and fine-grained rock from the Silurian era. It is gray in color with some shades depending on site and layer from which it is extracted. There are usually only a few shades present, while the stones when exposed to the outside air in the course of time turn brown.
The minerals and chemical components vary within a quarry and also from quarry to quarry.

According to Wessman, the stone from the Valar quarry sometimes has thin veins parallel to the layers, as it is deposited, which contain clay minerals. The matrix (= cement between the grains) of the stone usually consists of 5-25% calcite.
The high proportion of CaO and CO2 as the relatively high shares Al3O3, Fe2O3, MgO and K2O are typical for the stone. In the stone usually a small area amorphous silicon cement is present around the quartz grains while the calcite cement is filling the pores.



The church in Öja on Gotland.

Wessman has examined thin sections of sandstone from the quarries Botvide, Uddvide and Valar and indicates that the stone consists exclusively of quartz with empty spaces between the grains (the calcite cement was barely visible). The grains consist primarily of quartz and feldspar with a small portion mica and calcite. The stone contains small amounts of pyrite - rarely more than 1 per mille -, and very small amounts of glauconite, limonite and jarosite.

The grain size of the Gotland sandstone ranges between 0.1 to 0.2 mm. In the stone of Valar it varies between 0.05 and 0.15 mm. The clay minerals resemble brown sticks with a length between 0.2 and 0.4 mm and the orientation is usually parallel to the layer. The stone is very porous, ie between 5-23%. The average pore size was 13 micrometers. Therefore the stone can contain 5 to 9% of its weight in water. The compressive strength of the stone is about 50-80 MPa.

The use for construction and decorative arts

In the entire Baltic region since the beginning of the early Middle Ages Gotland sandstone is used to build and for the decoration of buildings. It is one of the most widespread decorative stone in Sweden. This is because it is easy to model. Some specific examples of famous sculptures on Gotland were founded between 300-100 BC. Also some later stones were made of Gotland sandstone.

It was not until the Middle Ages when its use really became general. It was used for example for fonts that were exported in the 12th and 13th centuries over the whole Baltic region.

During the 13th century and until the middle of the 14th century, it was also used as a building material on Gotland, for friezes and portals, mostly in churches.
Some of the most famous churches that were built entirely of Gotland stone are in Öja, Sundre, Hamra, Fide and Grötlingbo.
The use of sandstone decreased at the beginning of the Danish rule in the 14th century.



The Glimmigehus in southern Sweden.

The Glimmigehus in southern Sweden (than a part of Denmark) by Jens Holgersson Ulfstad, was build of limestone and sandstone from Gotland in 1499.
Under the influence of the Dutch Renaissance the decorative stone became modern again in the 16th and 17th century, which led to the reopening of the quarries.

In the beginning, the Danish kings used stones from Skåne, but by the end of the 16th century, they began to use the quarries of Gotland. The quarries were supervised by the Danish kings Christian III, Frederick II and Christan IV. The Danish kings also sent experienced stonemasons to Gotland to restart production.

In this way, the castle Kronoborg in Copenhagen was built of Gotland sandstone in the 1570s as the Frederiksborg Castle in Helsingör by Christian IV. The Valar quarry supplied most stones where it was fashion to use Gotland stone in facades, sculptures and portals in palaces in both Stockholm and in Denmark, Germany and Poland.

Mining the rock continued when Gotland became Swedish in 1645 until well into the 18th century. Some famous examples of this period are the Royal Palace in Stockholm and the chapel for the Swedish kings in the Riddersholm church in Stockholm.

The use of the stone decreased in the neo-classical period at the end of the 18th century, to become very popular again in the 1890s until the early 20th century.
The use of the Gotland sandstone as a building material eventually stopped after 1920. Today the stone is mined primarily for restoration purposes.

A geological survey from 1998 shows that Valar stone is most suitable for building. The Valar stone differs from the other sandstone because it is lighter in color and finer in texture and contains less clay. It also is layered and therefore stronger.

A few quarries still exicts: the Valar quarry was operated for stone by Slite Stone Masonery (now discontinued) and the quarries Husryggen and Botvide where small quantities of stone were mined by mason Jan Kviberg who sarted the Brugsvik Stone Museum. Jan-Erik deceased in 2007.



Jan-Erik Kviberg and Anna Kviberg-Olauson

The museum is now being continued by Henrik Jacobsson and Elin Olausson. These two deserve great appreciation for this: is not easy to keep a museum alive as a volunteer on Saturdays and Sundays. Homage!

Brugsviks sandstone museum Kettelvik
With the mechanization of the stone industry, most masons disappeared. In Kettelviksmuseet you see in it's old environment tools and machines, and how they were used in the past.
The Stone Museum in Kettelvik was founded in 1986 by Jan-Erik Kviberg of Burgsvik.

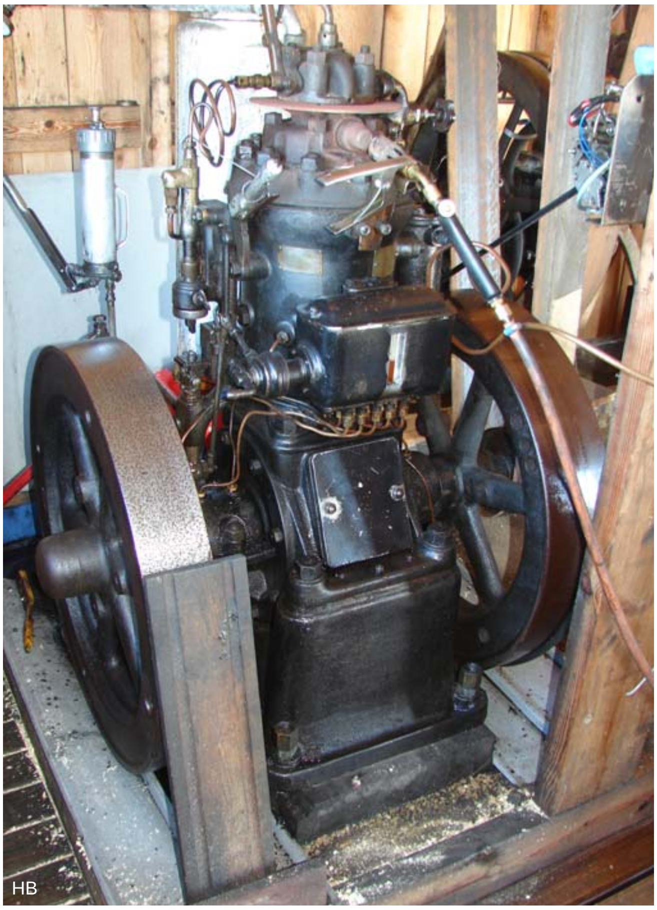
He placed a steel container in the former "käule" which was used by the last Storsudret stonemason, John Larsson. Jan-Erik Kviberg wanted to commemorate "his own stonemasons family, but also all other masons on Sudret. Their sacrifices, toil, hardship, work and families would be lost in oblivion as there was the history of Gotland in the 80s. The workers were not esteemed and pushed away in an unjust and humiliating way."
(Quote from the newspaper Haimdagar No. 2/2000).

Ultimately, an additional steel container was placed and in 2000 there came a small building with a crude oil 'Advance' engine to drive a stone lathe.
This was a technological innovation that became available in the 1930s and created a revolution in the process of making hone stones.

After a few years, Jan-Erik Kviberg became the help of his partner Anna Olausson and it evolved into a Stone Museum, one of Great Sudrets main attractions with approximately 30,000 visitors per year.

Jan-Erik and Anna were also greatly helped by Jan-Erik's older brother Borje. He died in 1996 and Jan-Erik died in 2007. Elin Olausson was a daughter of Anna, and together with her partner Henrik Jacobsson active in the Stone Museum. In 1982 he started the Gotlandsbrynet company, that produces and sells sandstone products in both the museum and via other outlets.





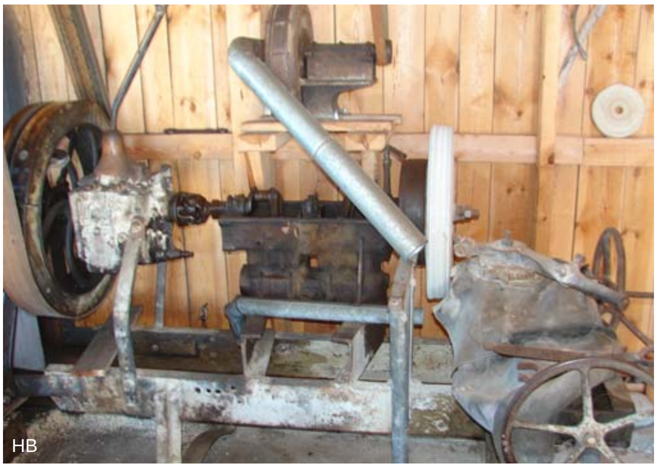
The Stone Museum and Gotlandsbrynet are run now by Henrik Jacobsson and Elin Olausson and is still a main attraction of Great Sudrets with about 25,000 visitors per year.
The museum gives visitors an insight into how the quarries were worked and how the sandstone was extracted.
It gives a good insight into the stone industry in Burgsvik and especially the working conditions of small farmers and workers in the stone industry under conditions that often lead to premature death from dust lungs (silicosis).

The Association of Friends Kettelvik Stone Museum was founded in 2000 to support activities of the museum.
The Association has a long term agreement with the landowner and the right to use the land and buildings of the museum.

The Association soon realized that it was necessary to replace the steel containers by a more suitable museum building space that also could accommodate the sale of Gotlandsbrynets products to finance the activities of the museum.
In April 2010 the building began and it was completed in June 2011. The County Museum has been responsible for the interior and the design of the exhibition space.

The new museum building is 80 square meters and fits well into the landscape. It has the characteristics of the other smaller buildings in the museum. The building is not isolated and has no electricity, water or sewage.

The large facade and roof windows ensure that the lighting conditions are perfect for the time that the museum is open.
The building is also selling Gotlandsbrynets products.
The Association of Friends of the Museum Kettelvik Stone as the owner of the new building, has signed an agreement with Elin Olausson and Henrik Jacobsson / Gotlandsbrynet who are responsible for the operation of the museum.



A lathe to turn grinding wheels. You take a gearbox and connects this via a universal joint to the crankshaft of an open engine block that is upside down. To the flywheel you attach your piece of work.



A differential Drives a Drill.



A tour of the museum building



Mold for buttons approx 1807



Cast for a tensioner from the Viking age.



Another mold.



A stone with runes.



An old grinding stone.

A tour of the site





Wind driven pump to keep feet dry.





Primitive cranes for heavy work.





Half boats as shelter from the wind.



Many died young because of black lungs (silicose).

Contact: Gotlandsbrynet, Henrik Jacobs Sons.
Address: Gotlandsbrynet, Hamnvägen 21;
S-623 35 Burgsvik
telefon / fax +46 498-497020 Mobile 070-626 7662
http://www.gotlandsbrynet.se gotlandsbrynet@telia.com
GPS: N56º56'33.1 E018º08'59.4

Sources

Conversations with Elin Olausson and Henrik Jacobsson

Final Report for the Research and Development Project Non-Destructive Field Tests in Stone Conservation Field and Laboratory Tests från Riksantikvarieämbetet Report 2006:4

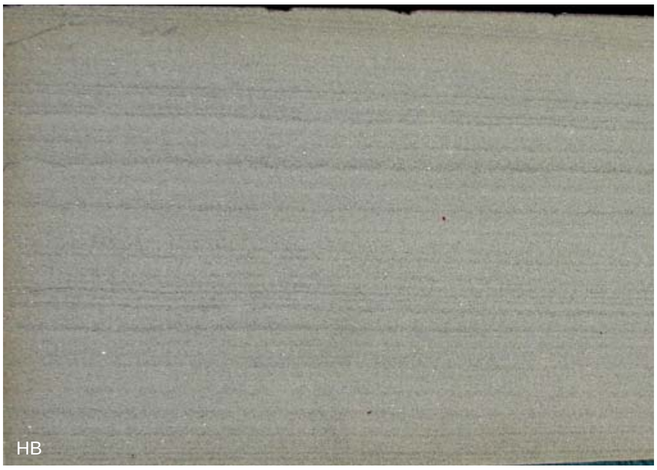
Wessman, Lubica; Studies on the frost resistance of natural stone; PhD thesis at the Division of Building materials, Lund University, Lund Institute of Technology, Lund, 1997

Slutrapport för Leader projektet "Nytt Sten Museum vid Kettelvik". Journal number 2010-3691. Stödmottagare: Föreningen Kettelvik Sten Museums Vänner, Vamlingbo, Burgsvik. Contact Person: Sören Larsson, 070-3241014, larsson.tybble@telia.com

The stones



The fracture surface.



The layering of Valar stone.



This stone we bought in Visby in 2001.



This old package we received from Torsten Lenners (Orsasten) in 2012.





Fotfilen for removing calluses.



For use in the kitchen.



In the form of a bench stone, used for bevelsetting.



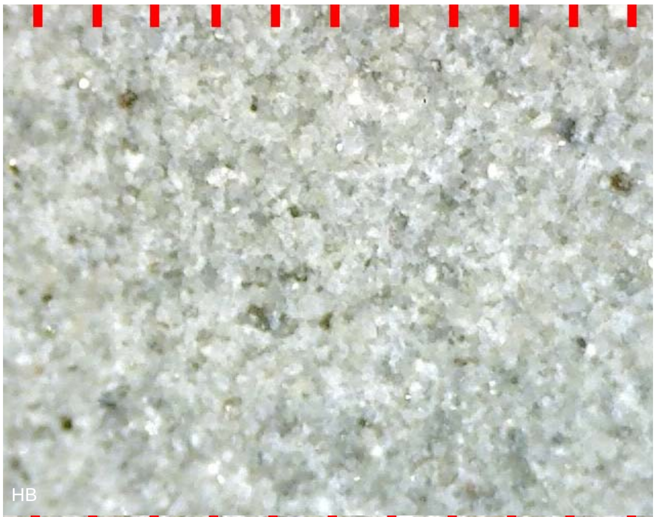


In the form of a puck, the stone is used for sharpening axes. The coarse side for the correction of the fine dents, and the side to edge to recover the cut.
The Gränfors comes from the same quarry.





The slices are removed from the stone with a diamond drill and subsequently sawn into slices..





Micro 200x scale 0.5 mm. The top of a puck and the bottom of a fine bench stone.



SE Zweden Lemunda sandstone



During a visit to Latvia in 2011 we met a geologist and imperceptibly the conversation turned to grinding and whetstones.
One of the theses was that in Sweden so little can be found in the area of whetstones. No wonder it was said the Swedes walk into their garden, pick up a stone and they can sharpen their knives. If you are lucky you will find a fine sandstone and you're set. Oh, he says I have a stone from Lemunda in the car, I will go and get it... It turned out to be a nice boulder we promptly get as a gift.

Nowadays there is much archaeology done. It's nice if you can find a settlement. Of the study a report is created that sometimes appears on the Internet. Then you're in luck and many can take notice, like this writer. It is noteworthy that the terminologies is quite different. For example, the name grinding stone is used for a bar-shaped whetstone, but also for instance stones in the form of a wheel. The latter is often found, and sometimes a geologist is able to find out where it comes from. In a study in Stockholm, flint was found in Västergötland, Kristianstad, on the west coast and Sydskåne; also grinding stones from Lemunda and Tenhult could be proven.
For us this was a clue to go and have a look in Lemunda whether still traces of the quarries where the grinding stones came from, could be found. If possible, we wanted to bring some rock samples to be able to say something about the quality of these stones later.

Unfortunately, there was virtually nothing on the internet to be found and if you find something is in Swedish - Google translate makes a hodgepodge of it. Lemunda was not quite on our route but by driving a little further we came pretty close.
It appered difficult to reach and while the whole area is protected by signs with "Passing prohibited". We assumed that it does not apply to local traffic and identified ourselves as such. We just drove by. With Google Earth was decided where it could be somewhere. These gravel roads became 2 tracks with a thick grass edge in the middle, but they remained as "road" on the control indicated, so they would probably come out somewhere in the civilized world.
When the Navigon remained indicated "Lemunda" it was still a dirt road where only stood 1 house.



Henk decided to go ask, we were already signalled in the house. So often there would not stop cars on the fence.
The people there were very helpful.
Son (almost 19) spoke English and even knew with help of Mom and Dad the quarry. That quarry had been left a long time ago and filled in with water. But certainly there would still be stones.

On Henk's question where we could stay in the neighbourhood, spontaneously a place was offered near their boat house. There certainly was a spot where we could park. So we went to take a look.
It indeed was a very nice place, there was room for the car to turn, a slipway, a small hut and a table with some chairs around it at the lakeside.



While wandering there to explore we found an old quarry on the shore just north of the boathouse.



There were a number of ready-made stones and in the water at the slipway was a broken millstone.







A stone like this was used as a table. Further search revealed that there are multiple quarries and they went on until the big pit. The sandstone section runs approximately from: N58 º 35 '55.7 "E014 º 52' 53.1" Height 98 meters.
Nearest address Lemunda 591 96 Motala SWE.
Nearest intersection Nedra Lid & Sjökärsvey.
Big quarry: N58 º 36 '21.2" E014 º 53' 52.0"
Nearest address Lemunda 152, 591 96 Motala SWE.



On this route we found several quarries with some kind of small harbour, usually there are remains in the water.
We did not walk the entire route as it was quite bumpy.
We drove to the big pit with the car.
Here too, we chopped a sample from the wall.



It was quite difficult, a geologists hammer supplemented with the chisel did the first part of the job, and crowbar did the outwork and the final was the sledgehammer.



There were grinding stones also, which apparently had been made there. A stone often was broke when it was almost finished, that meaned a whole week's work gone and no wages. Stonemason was a tough profession that not always paid off.



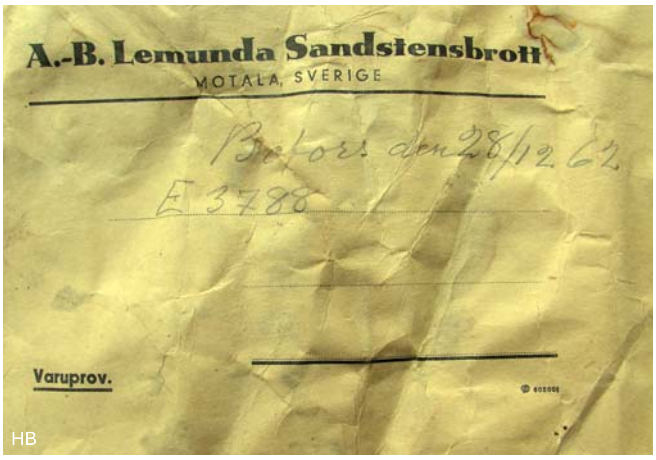
In the course of time the large quarry was indeed filled in with water, there were certainly two buildings between quarry and lake in which a pump had stood to keep the quarry dry.



On the floor of one of pump houses lay a huge millstone which apparently had served as a foundation.

It was visible that the quarry had been a long time out of use, the wooden poles for electricity were pure rotten.

During some time in this large pit fine white sand was won for the glass industry, there was a whole system to process and load the sand in and around a large building.
There was a box with a number of samples (of sand) Henk made a picture of.





We now have 4 stone samples to test:
.1 A brown red from the lower quarry at the harbor;
2. A white-gray from the 2nd quarrie from below;
3. A yellow-brown away from near the 2nd pump house.
4. A yellow cut out of the wall in the large pit.



A Lemunda sandstone in the tower of the castle in Vadstena.


1


1


HB
1


2


2


HB
2


3


3


HB
3


4


4


HB
4

All stones are bevelsetters and have a very hard bond of 3000 grams. Of number 4, the binding is very soft when wet. Strikingly was the behavior during cutting. No. 1 was difficult to cut and flatten by a high content of silica.

History Lemunda Sandstensbrott

The sandstone mining in Lemunda has a very long history. In the 1600s, the family Rotkirch and later the family Åkerblad owned the land on wich the quarry is situated. Anders Petter Olofsson purchased the land at a given moment after the death of a previous owner including farms and Lemunda Grönlunds. It was a very energetic man, and began to win minerals. In 1870 there were about 50 people in the stone industry and the Lemunda Sandstensbrott company was formed.

In 1899 the company had 60 employees. The company had as an activity making grindstones and supplying quartz sandstone for furnaces and buildings.

The first major investment made was the purchase of the steamship Lemunda, who for many years transported millstones and grindstones to Russia, Finland and other countries transported. Later they bought three other ships, namely Elvira (160 tons), Fanny (100 tons) and Valkyrie (60 tons). This was for many years the transport of sand and stones at various ports, both inside and outside the country. Sailing became unprofitable when the motorized trucks came.



Elvira. Photo seen in the museum of Motala.

The vessels where sold then. Elvira was later scrapped off the coast of Norrland. The highlight was in the early 1950s with 80 employees. Today both farms and the stone industry are sold to new owners.

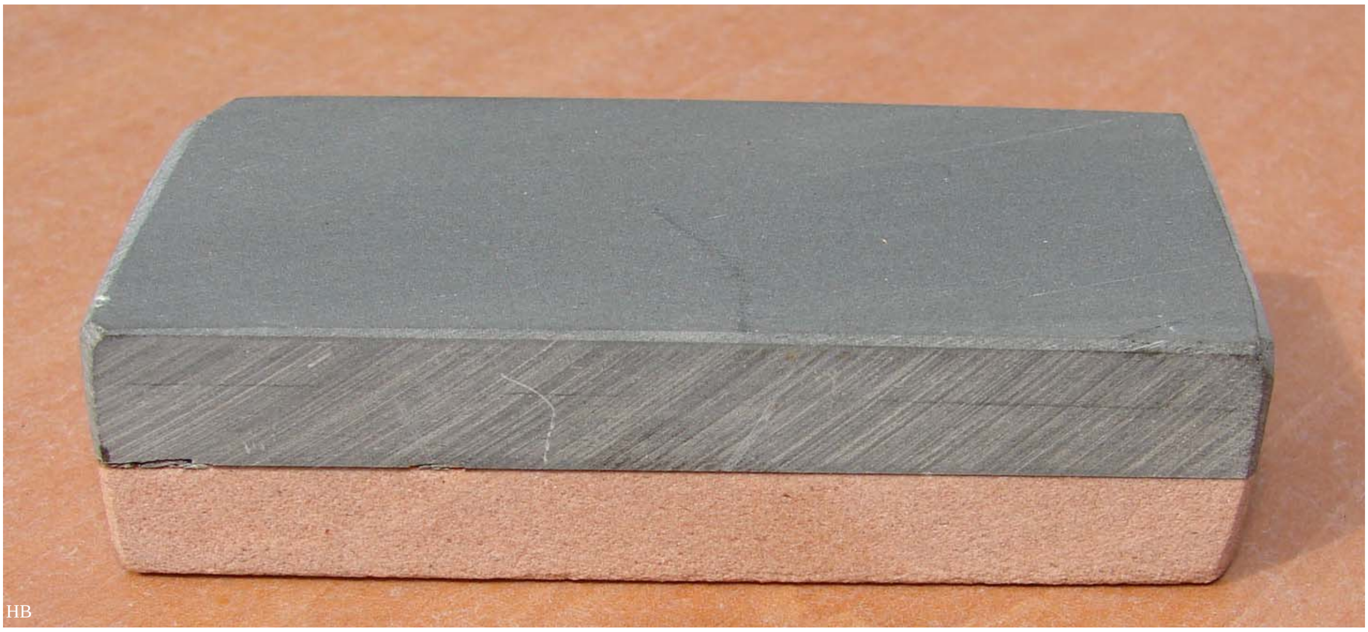
There are still 6 to 7 people engaged in the production of special sand.

The activities of Sandstensbrott Lemunda created many jobs and employed an entire neighborhood, but the price for this was very high. The stone workers were rarely older than 50 years. The reason was that the sandstone contains large amounts of silica, making the workers suffer from silicosis, which always leads to a premature death.



SE Sweden Loosbryne

Thanks to Conny Persson "Los Rock & Metal"



Introduction

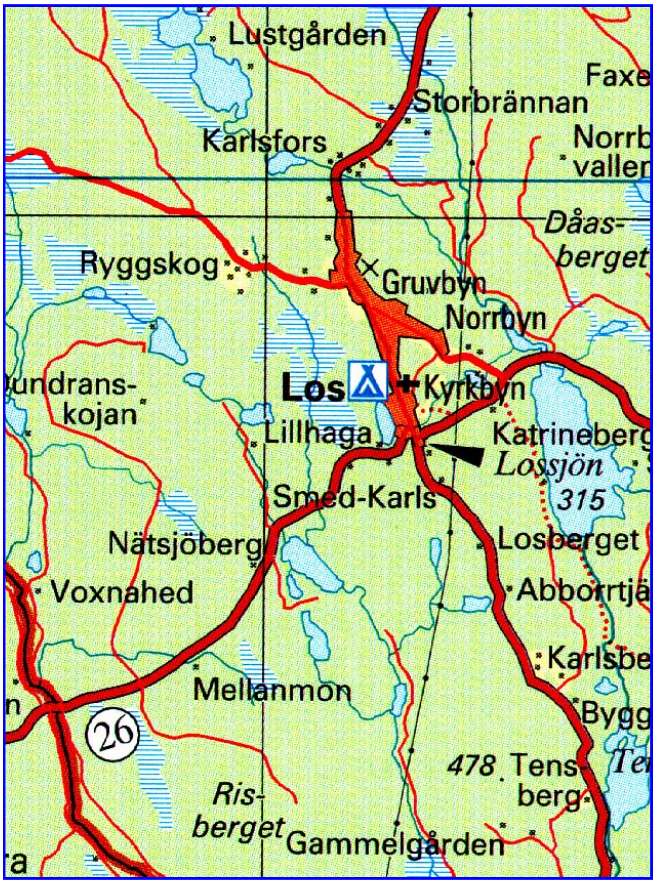
During our visit to Torsten Lenners (Orsasten) we saw a small whetstone which had a dark green slate underneath. After a good look we noticed how nice it was: it looked over k5000.

Reason enough to ask Torsten whether there was known more about it and larger pieces were available. After some time, Torsten came back with 2 pieces of slate, of which we wanted to know where this came from. The stone came from Loos (Los), so we had to go there. Loos or Los (they are used interchangeably) is also in the municipality of Orsa, although it was about 84 km further on.



The stone was mentioned in a leaflet "Stenriket". In this leaflet geological activities were listed that had something to do with stone in the areas Orsa, Älvdalen, Malung and Ljusdal. We went on our way to Los.

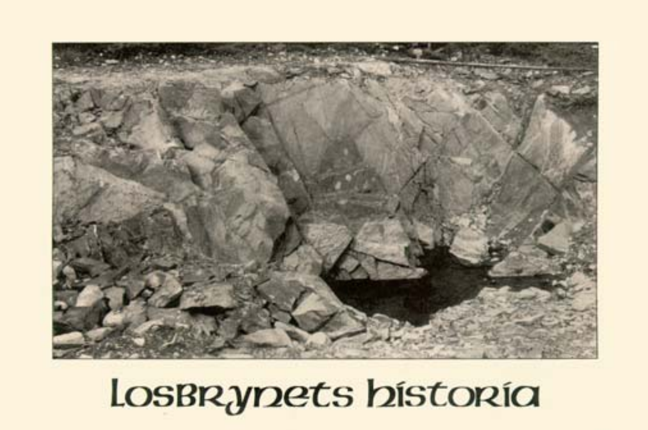
Arriving in Los the address proved to be "somewhere" so we had to ask some people where the location could be. This was not easy.



After some time we arrived at the Koboltgruvan in Loos. The slate was a by-product in the shop of the mine museum. It turned out that they have a water-driven whetstone saw mill rigged again as a tourist attraction. Unfortunately, the place was not indicated and therefore could not be found.

Email: jakarl@loosgrufvan.org
Homepage: www.loosgrufvan.org
Loosgrufvan Föreningen, Pokerbacken 17 820 50 Loos
Contact Person: Jan-Åke Karlsson
Tel: +46 (0) 33 657-105 Mob: +46 (0) 738 036 585

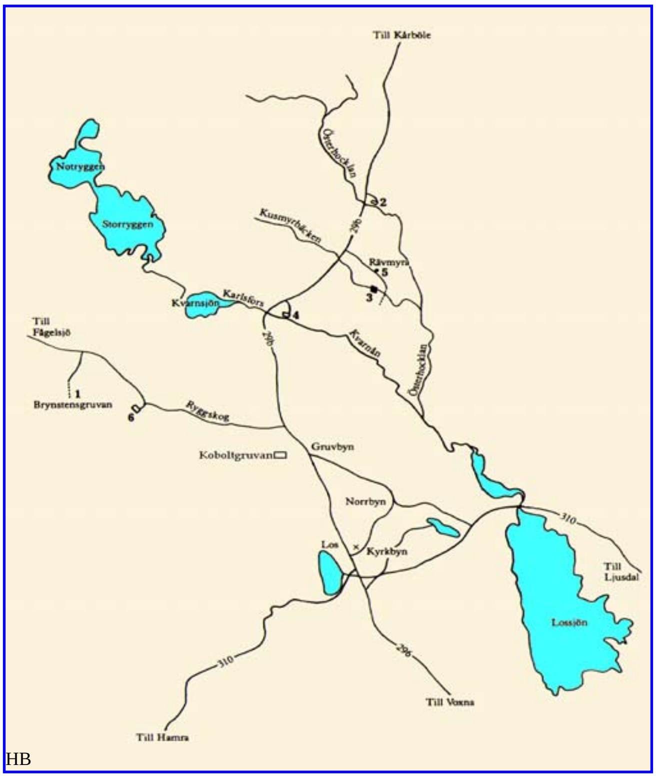
The stones are worked nowadays with modern machines.
In the mine museum we found more information, but it was limited as the guide there knew little or nothing, and the people who should know were on holiday in Greece.



However, there was a small booklet "Losbrynets historia" published in 1984. This booklet we scanned and OCR processed at home and we had translated it to understand more. Of course we continue to seach and what we know we will share with you.

History

The Loos sharpening stone was first mentioned in a book of the Royal Swedish academy of science 1750, at that time there was no industrial production and people who passed that site just used to bring a stone and use it as whetstone. That site is about 1 kilometer from where the stone later was found. The oral history stated that there were forestry workers employed in Ryggskog (Black Forest) who regularly took a break. During a break one of the workers picked up a stone from the ground to remove a dent from his axe. The grinding proved to be very good, and the fact that this stone had excellent properties for grinding and honing has obviously been discussed.
This was the beginning of the local whetstone industry.





The slate was quarried around 1850 near the village of Ryggskog north of Los. Ryggskogs slate is very dense in structure and has a very fine grain which gives it particularly good grinding properties.
The slate is a smooth grained grey to grey-green stone that occurs in a large area west and northwest of Los.
A description of this kind of stone can be found in H. Lundegårds "Berggrunden i Gävleborg".
Slate mining in Ryggskog took place from several small quarries and initially the stones were made by hand for household use on farms in the area.



The ladies also used the stone to sharpen their needles. The stones for the sewing basket usually had a tapered shape (pendant) with a small hole in it so it could be attached to the belt.

The production took such a form that there are examples of taxes, penalties and ecclesiastical payments paid in some places with grinding stone until the 1800s.
So this was a sanctioned payment, in the same way as happened with woven fabric during the Middle Ages.
Due to the necessity of grinding on farms the demand increased. It was very convenient to have a whetstone at hand during mowing and in forestry.

1. First whetstone quarries.
2. Hans G. Borg's whetstone saw mill (demolished 1939-40) and the current water-powered saw mill. It is now a tourist attraction.
3. Östen and Åke Borg's saw mill Kusmyrbäcken (ruin).
4. Gjers whetstone saw on Kvarnån (ruin).
5. Ake Borg's whetstone saw mill Rävmyra (obsolete).
6. Los “Stone & Metal”, Conny Persson. Modern whetstone sawing is back in Ryggskog and in use.
This map can be used to orientate in Google Aerth.

Work on the production of Losbrynen is described by Ernst Eriksson in Folklore Research, Uppsala in 1932 (ULMA 5842).
It tells, among other things, how Ernst Eriksson (born in 1876) soon went to market in Östersund with a horse and sold farm-made whetstones.
At the end of the 19th century there were whetstone production companies such as A. Fahlström, Bergvik Ala., resident of Gruvbyn, Los, and A. Bergstrom, Ljusne Woxna, living in Rullbo, Los. According to documents from 1893 they went under the name "Company Fahlström and Bergstroms Bryn Stone Factory".



Even when demand increased, the stones were still hand cut.
In the year 1879 Hans Gustav Borg built the first water-powered saw mill in a bend of the Österhocklan, a tributary of the Voxnan.



The saw mill in Karlsmyr in the early 1970s.

This was a first tentative step towards the industrialization of the whetstone production. It gave a greater capacity, and capability to compete with Ryggskog farmers.
The raw material was brought to the mill by horses from the quarries where H.G. Borg, by contracts with logging companies, had the right to quarry the grindstone.

After Hans Gustav's death, the whetstone saw mill on Österhocklan was driven by his sons Herman and Karl. Herman sawed the stones while Karl grounded them flat. In 1940 Herman built a new saw mill with parts of the demolished old mill.

The existing water powered saw mill.










Conny Persson


Conny Persson

Åke Borg splitting a stone at his water powered sawmill in Karlsmyr.


Conny Persson

In this way the saw, plane frames and other useful components were reused. The saw and planing table are preserved to this day. It lies 15 to 20 meters upstream from the old mill. Herman has used it until about 1950.

Whetstone sawmill in Karlsmyr

Around the year 1941 the sons of Karl, Östen and Åke Borg built a saw mill in Karlsmyr. It was built at the Kusmyrbäcken and also powered by water.
Östen Borg told that when he was 12-13 years old, he brought whetstones to the station in Lobonäs with a horse. It was around the time of the First World War. To make the about sixty kilometres long trip, he stood up at four in the morning. Although this happened not so often, it must have been more than a day's work for a boy of twelve years old.

The stones were shipped with the narrow gauge railroad to Voxna, where they were loaded onto the train to Orsa. Large buyer of the stones was then, and in the years that followed on, Per Åberg in Orsa. The payment was partly in cash and partly done in the form of barter.
When the railway Voxna-Lobonäs was disbanded in 1933 the horse transports stopped and trucks were used.
Ludvig Johansson was a trucker. He loaded 2000-2500 kg stone at a time and drove straight to Orsa.
Dick Persson's son in law built an electric driven diamond saw.

In November 1980, Åke Borg won the second prize in a souvenir competition within the province with his Losbryne. The event was organised by the Tourist Board of Sweden and Country magazine.
The idea was that by the competition it would be possible to get better Swedish souvenirs. Åke Borg made whetstones in Rävmyra until the mid 1980s.
The current water powered whetstone saw mill, built in 1940, is still there and was renovated in 1973 by Ljusdal with an AMS subsidy of 50 percent.
The waterwheel is copied from the whetstone saw mill in Karlsmyr.

After the renovation Åke Borg was one evening of the week guide for tourists during the summer months, until 1980.
The saw mill in Österhocklaån is a functioning, water powered saw mill. It is currently managed by the Los Hembygdsförening and it is an interesting tourist destination.

Cutler and whetstone maker



Conny Persson is one of Ake's grandchildren who made Los whetstones until the mid 1990s. Conny operates under the name "Los Rock & Metal" and has a modern workshop in Ryggskog, which he built in 1986 together with his father Dick Persson. Conny is a fulltime knife maker & blade smith since 1991.
Conny specializes in one-of-a-kind damascus mosaic blades made of sheet metal and pipes. His passion is the development of mosaic patterns and making intricate mosaic patterns where beauty prevails for his knives.

Contemporary whetstone production

Dick Persson has two diamond blades with different dimensions in business and a machine for surface grinding. All the manufacturing is done outdoor during summer time. Nowadays, there are machines for all operations in the manufacture of the Losbryne. The stones are manufactured in different sizes and some are wrapped in a leather case. A small grindstone in miniature is made as souvenir.
With Dick Persson and the production of whetstones, we are back in Ryggskog, where the history of the Losbryne began.

Conny Persson, Ryggskog 59, LOS, 82050 SE Sweden
Email info@connyknives.com www.connyknives.com
Mobile: 070-321 33 55. Tel: 01-105 01 0657-105



Bjorn Nortora 1993

Werkzaamheden aan de wetsteenzaag.

Work at the whetstone mill.

Arbeit an der schleifsteinsäge

Le travail à la scie.



Conny Persson



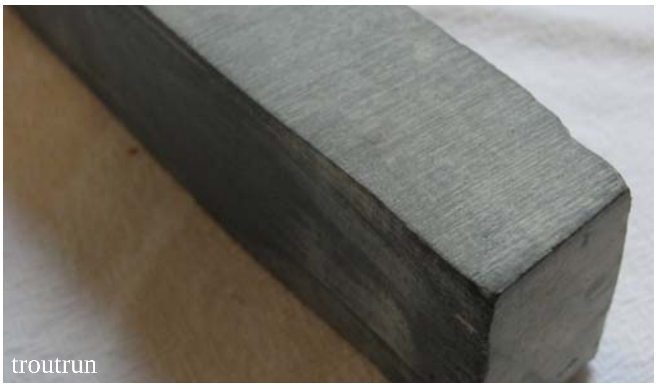
Conny Persson



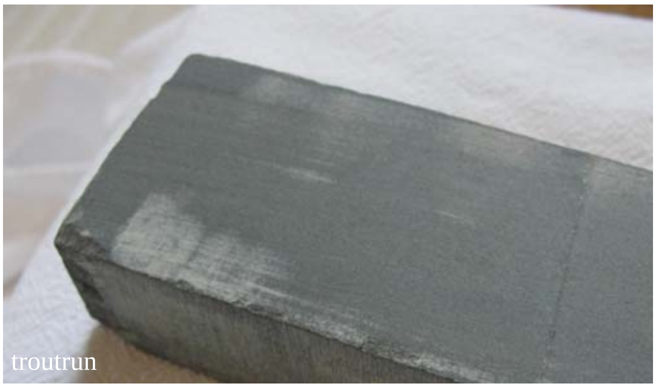
On E-Bay was in November 2012 was this 'Los Bryne' was found. The stone is 9" long and just over 1 1/2" wide and 1" thick. The photos are used with permission of the Seller * troutrun *.







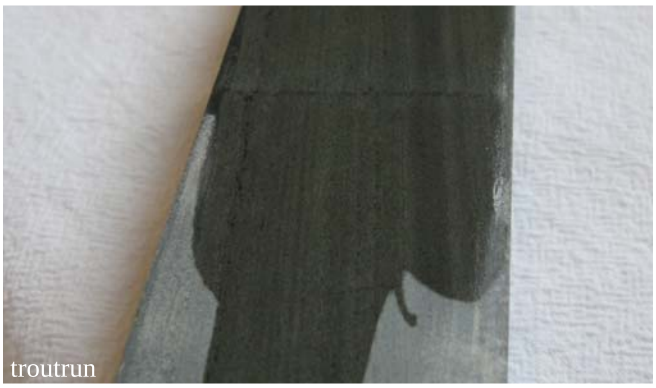
It is clear to see that the stone is cut with a saw.



The unused surface.



Dry surface.



Wet surface.

Various images



*This combination unfortunately was not for sale.
The sheath we saw and purchased later in Finland.*



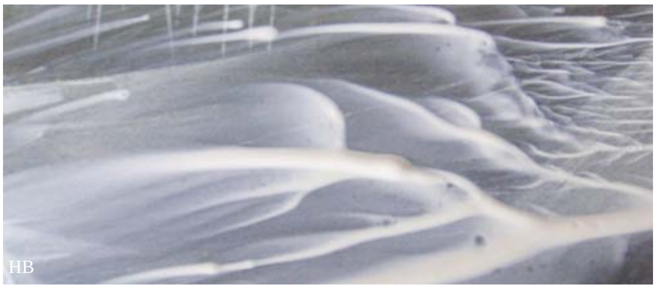
Losbryne in the exhibition of Koboltgruvan i Loos.



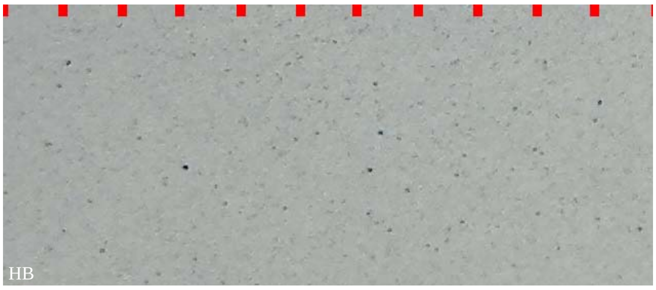
After much insistence and a telephone consultation with the "boss" we could buy (for 100 Crowns each) these pieces to make test stones.



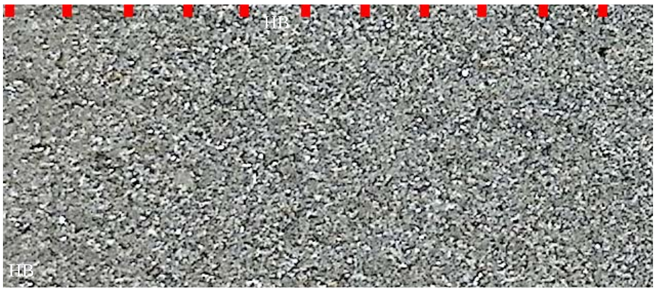
Cut by Torsten Lenners (Orsasten).



Losbryne slurry.



Losbryne slurry micro.

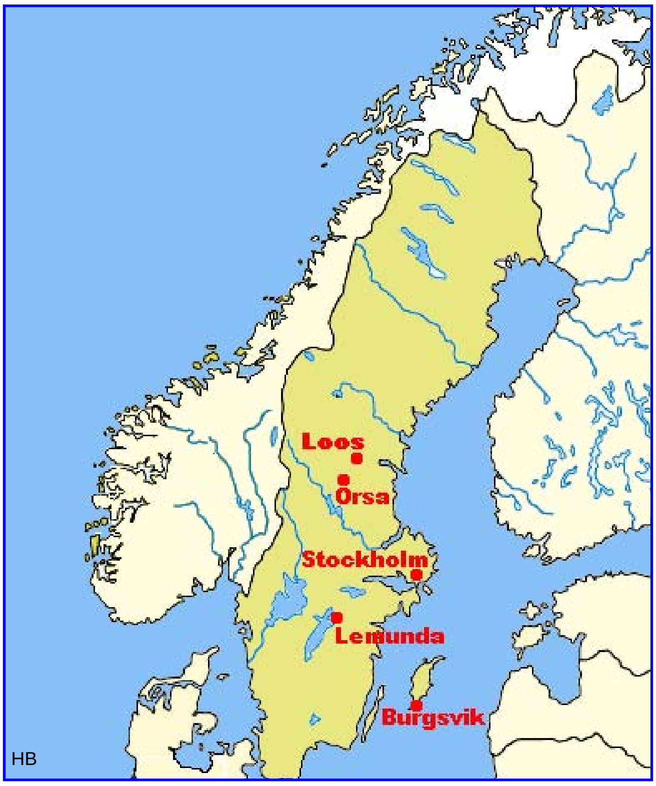


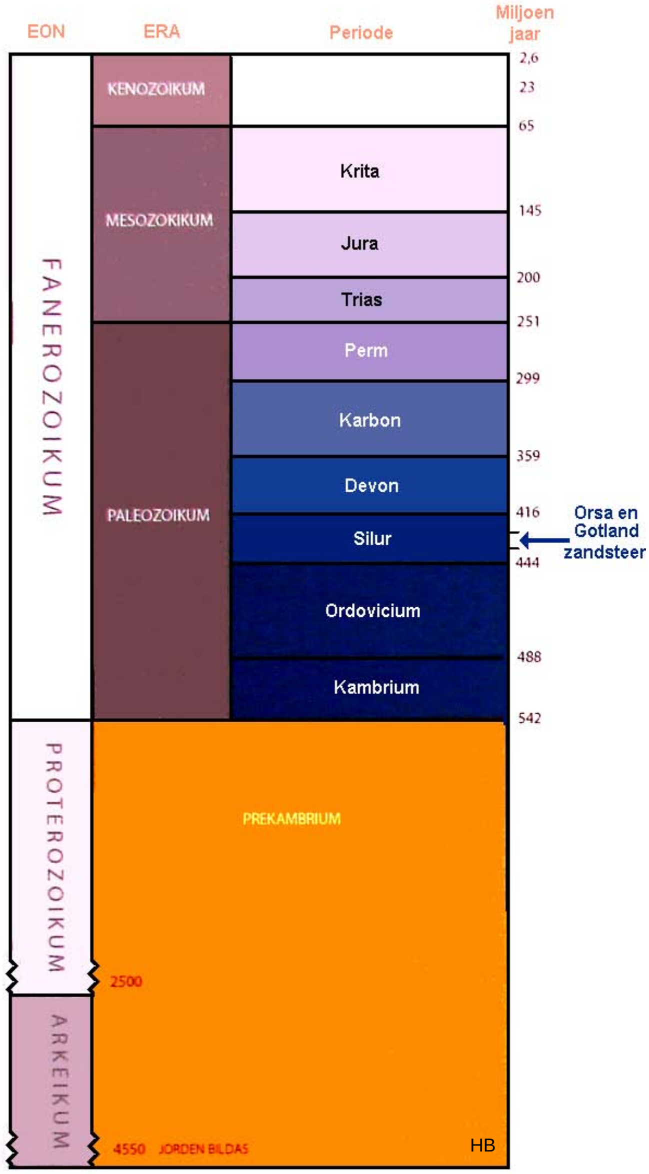
Losbryne micro. The binding (matrix) is 1200 to 1500 grams.



This combination we have bought for 280 Crowns from Koboltgruvan i Loos.

SE Sweden Orsa slipsten





Sweden has a long tradition in the production of grinding and whetstones. In two places it is still active produced on Gotland and in Orsa. In Orsa (Dalarna) since long time stones were won. In Los occasionally whetstones are made for touristic purposes.
In Orsa, the company "Lenners Orsasten" is active since 2009. Torstein Lenner has taken over the company from his father who founded the company "Lenners Orsasten" in 1984. There are made gravestones, portals, laws and grindstones in a modern way using diamond tools.
The address is Orsa STENHUGGERI AB, Gruvbacksvägen 4 794 91 Orsa. Tel 0250-55 03.30 Mob 070-522.41 33.
www.orsasten.se Email info@orsasten.se.

Orsa sandstone (Silurian)



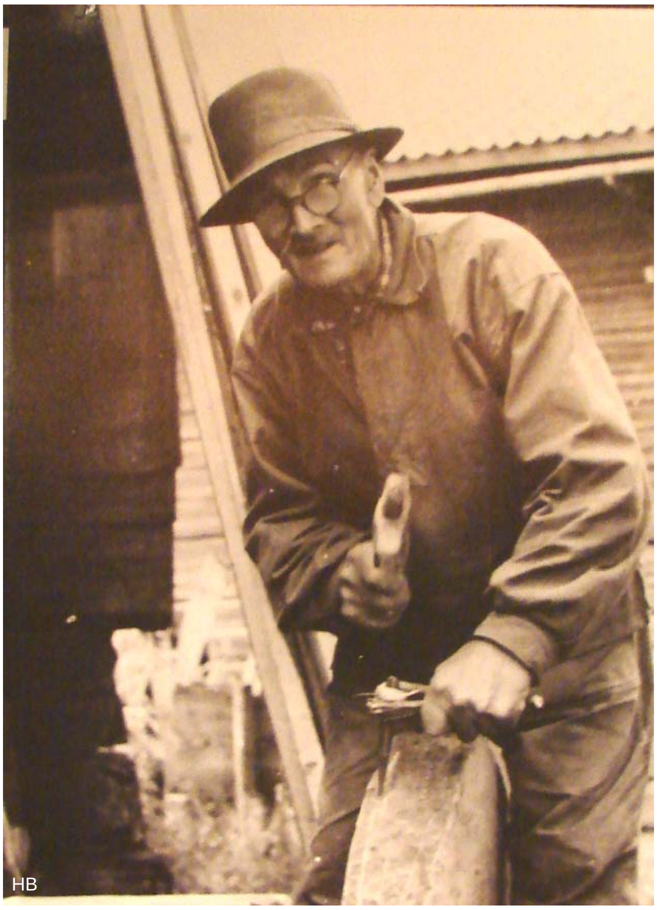
The Silurian age ranges from 416.0 to 443.7 million years ago. The climate became warmer and the sea level rose. The land mass was spread out over the big paleo-continent Gondwana. Gondwana was a southern supercontinent.
It was the heyday of coral reefs and the first lung fishes, land plants and scorpions appear. The sandstone from Orsa is an eroded remnant of the continental sandstones from the Silurian era. It is the youngest of the remaining layers of the lower Paleozoic sedimentary sequence in the area.
The sandstone consists of a conglomeration of coarse beach sand on the bottom, covered by a layer of loosely consolidated and dense quartz arenite, locally cemented by carbonate (Hjelmqvist-1966).

There was a study sample of Orsa sandstone taken to evaluate the potential of post-Caledonian sediments.
The sample showed to be a dense, red, friable sandstone without clay or carbonate (Hjelmqvist-1966). The density according to DIN 1936 is 2,25 kg / dm ^{3} and it can absorb 4.5% of water.

The history of the grindstone in Mässbacken.



The industry dates from the days of the Vikings, so it has a very long history. Since that time, about 1,000 years ago, people have worked with the sandstone in Mässbacken, Orsa, for grinding stones.
There are numerous archaeological finds that tell about this. Since 1500 people of Orsa work in the quarries, making grinding stones of the sandstone wich will be sold.



Through the centuries, this has been one of the most important sources of income for the villagers, and thus been a core activity for the community.
The craftsmanship of this trade is rooted in families because a large part of the population was very dependent on the income from the sale of grinding stones.



It was so necessary that they were forced to send their children at a very young age to start working in the mines. Unfortunately, over the years a lot of men died from silicosis. Even Linaeus noticed in 1734 that there were so many young widows in the community. The men became no older then about 40 years!

Working in the mining industry began in the 17th century and continued until about 1930. At that time, grinding and whetstones were no longer badly needed by the emergence of artificial grinding and whetstones. Thus the production declined. Around the turn of the 20th century there were 400 to 600 people in the sandstone industry producing about 100,000 whetstones a year.
Much of the old craftsmanship still can be found today if you have an eye for it.
Nowadays most sandstone mined in Mässbacken is used as construction material for buildings. There still are made grinding and whetstones at "Lenners Orsasten" in 2012, but it is constantly declining. The coarse version is a bevelsetter and the fine is suitable as a whetstone.

Museum



Apart from the company there is also a small museum "Orsa slipstensförening" that is run by volunteers (www.orsaslipsten.se).
It is located next to the "Lenners Orsasten" company and there is a possibility to have a drink or something to eat in Wärdshuset Slip Stones. There is a "nature and culture trail" of 3.5 km along many old quarry's like: Valgruvan, Ulasgruvan, Hampräta, Östermalmsgruvan, Lindagruvan, Malungsgruvan and Skojergruvan. The project is 2 hectares and the museum has a section mining, quarrying and an open pit.





The motif on the stone aims to simply make it simple to bore the square bore. In the foreground a carved whetstone.

In the showcases there are many old objects, used in the making of whetsones. There are English, German and Dutch speaking guides available. There may be borrowed summaries of the used texts to understand the available information.

craftsmanship

The ancient craft of stone carving is still maintained by a group of volunteers. The trade was in danger of disappearing and therefore some old craftsmen decide to keep the craft alive. Their expertise is regularly is propagated by the Slipstengrupp (Orsa grindstone group) by giving demonstrations in which you can handle hammer and chisel yourself.

The stones



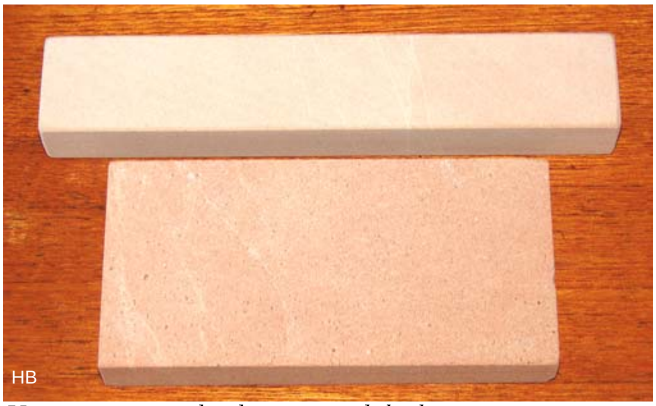
We were welcomed by Torsten Lenner who showed us around enhousiastic. He had a closet with whetstones in which I was quite interested. On one of the stones was glued a dark green slate what made me instantly question do you also have larger pieces of this stone and where does it come from? The result can be found in the story of the Loosbryne.



A old version of the packaging

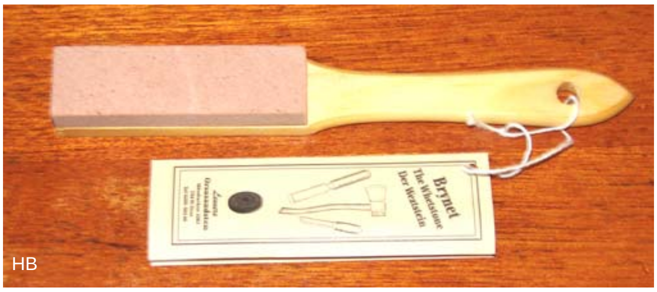


A new packaging.

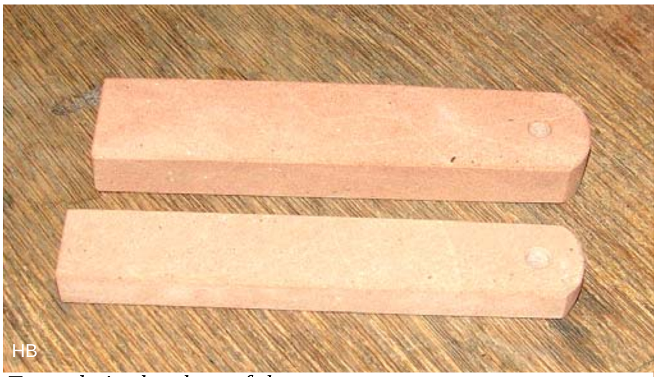


Upper stones are bankstones, and the lower stones are soevenirs.





This version is suitable for use in the kitchen.



For sale in the shop of the museum.

A pillar of grinding wheels in front of the museum





SK Slovakia Rozsutec

In the north east of the province of Zilina Slovakia, we find a small town Terchová (WGS84 49° 16 '0" N, 19° 2' 0" E) with about 4000 inhabitants. It is situated at 514 m altitude north of the Mala Fatra mountains. Here lives the last Slowakian whetstone maker Lubomír Krivoš.



The Slovac national hero Juraj Jánošíks, always used a Roszutec stone when it was time to sharpen his legendary ax.





In the museum part of the castle in Trakay, Lithuania, hang three whetstones. The right stone is a Rozsutec and comes from Slowakije.Te recognize the blue-brown color.

The Roszutec whetstone comes from a sedimentary sandstone layer in the Mala Fatra Mountains (National Park).
One of the main peaks is called Velky Roszutec (1609 meters), by many considered as the most beautiful mountain in Slovakia.



The sandstone slabs are removed from the mountain with a shovel.





Originally the sandstone is blue, but by corrosion the surfaces, of the plates, the sandstone turns brown. Therefore, almost all Roszutec whetstones have 2 brown edges and a blue center band.



The stone is known for its fine regular grain with a high wear resistance. The grain - to the extent that can be spoken of a grain - is estimated at 6 to 8000, some go up to 10,000. The result strongly depends on the smoothness of the surface. Some grind the stone with 600 grit diamond while others use 2000 grit SiC waterproof paper that removes the sharp peaks of the grains. Its better to use only the same material to flatten it or to make slurry.





The saw with diamond wheel.



A slowly rotating SiC disc with water cooling for plane grinding and shape of the scythe stones.

The last one will grind a little but will have a polished surface as a result. This is also the reason that not all knives are sharpened equally well. The K600 with flattened stones will be somewhat 'griffiger'.



Lubomír Krivoš the last whetstone creator of Slovakia.

The best possibility is to flatten a stone surface with the same stone. Blunt grains break off and than the stone shows his true character. This unfortunately takes a lot of strength!



Far too polished

The stones perform best with plain water containing a little soap as an addition (ratio up to 1:1). A little baking powder prevents corrosion. The Roszutec whetstone does not work optimally with oil.

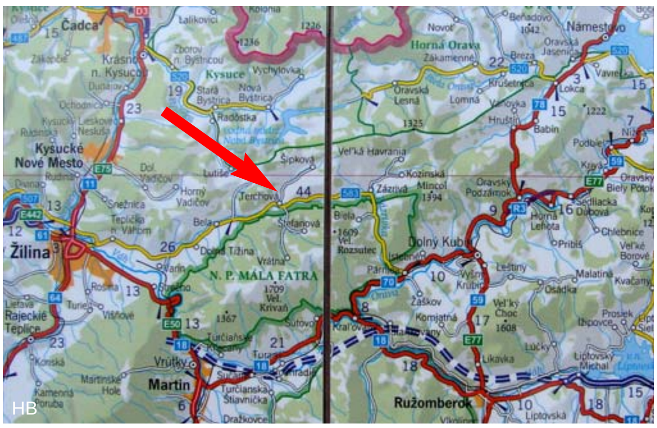
We spoke with Monika Krivoš, the daughter of the last whetstone maker in Slovakia Lubomír Krivoš. She said her grandfather Hugo Michalek fetched stones from the brook on which he sharpened his knife. This was the beginning of the making of whetstones. The use of whetstones has been known for centuries, see the capter at the Trakay castle in Lithauen and the story of Juraj Jánošíks.

The company is small, say very small, and as the demand increases there must be worked ever more.

When Lubomír stops, the making of whetstones also stops. The son does not want ...



A path of brown whetstones ...



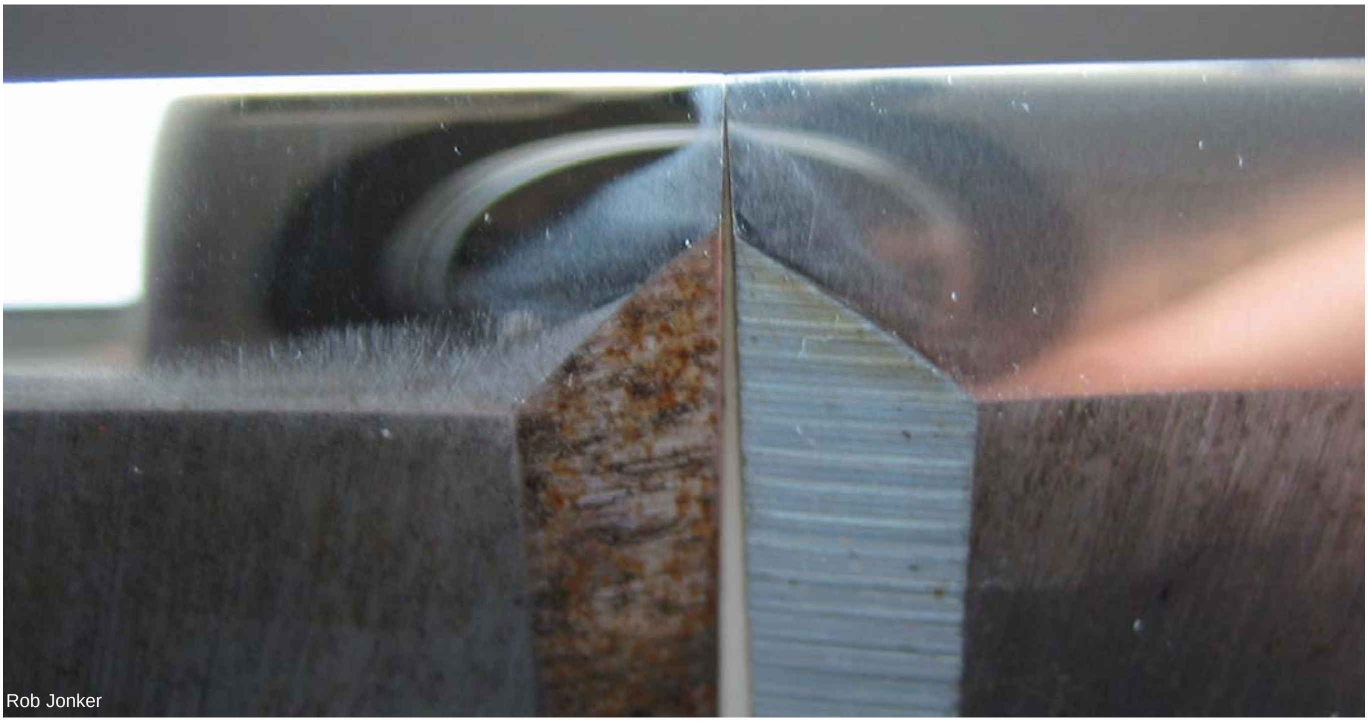
Address

Lubomír Krivoš - Rezkam, Terchová 877, 013 06 Terchová
Telefon: 041/569 53 45, Mobil: 0903 511 608.



The map in the database:
@ 01 stone number: 00000231
@ 06 Factory Name: Roszutec
@ 08 Importer: Henk Bos
@ 09 Where purchased: Lubomír Krivoš Slovakia
@ 10 Form / model: Bank Stone
@ 11 Material: Blue sedimentary sandstone
@ 12 color: Blue + brown
@ 13 Designation: Roszutec 6000
@ 14 Grain mu: 2 (6000 JIS)
@ 15 Hardness Grain: 7 (Quartz)
@ 16 binding Hardness: very hard - silicaatbinding
@ 17 Water / oil: water
@ 18 Soaking: not necessary
@ 19 Texture: very close
@ 20 Result: very nice - see picture
@ 21 Cutting Speed: K600 in areas with good
@ 22 Feedback: good
@ 23 Lapping: rare
@ 24 Slurry color: gray
@ 25 Length in mm: 156
@ 26 Width in mm: 54.5
@ 27 Thickness in mm: 21
@ 28 Dry Weight: 457
@ 29 Wet Weight: 458
@ 32 Srt. Mass: 2.58





Roszutec-Ohzuku.



Fracture surface



The stamp



The Rozsutec gets increasingly finer after intensive use, probably due to the very hard bond causing the grains hardly wear or get loose particles. Dressing goes very well by using a natural Japanese Nagura stone. This smells strong, but works very well. It creates a slurry that makes the grinding with the Rozsutec stone much faster. The slurry gets fairly rapidly much finer. As a result, the scope of the Rozsutec is properly enlarged. Eventually Rob got the finish of the right chisel on the photo. The series then used was Binsui (about 1000), Aoto (about 2000), Rozsutec with Nagura and finally washed Rozsutec. Wherein the mirror finish of the left chisel on the picture emerged.

The stones are available through the website
http://www.cestadreva.cz/page/obchod/prirodni-brusne-kameny Merboltice 95 405 02 Merboltice CZ.
email: info (a) cestadreva.cz, IC: 73743488 císlo úctu: 827829001/5500

Also from Jan Marek.
Jan is the core of the company. Provides training and instruction on grinding, honing and dealing with woodworking tools. (srdce projektu, poradenství).
Email: jan.marek@cestadreva.cz
tel: (+420) 723 366 421

Zuzana Pekna.
Zuzanne maintens the site, handles the shipment of ordered products and the administration (webove stránky, obchod, administrativa). Email: zuzana.pekna@cestadreva.cz
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405 02 Merboltice CZ

The stones are also available through the site http://www.bessermesser.de under the incorrect name Ösi 6000 natürlicher Wasserabziehstein
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USA Hindostan whetstone



Difficult to recognize because of the 'glazing'.





Introduction
In England, sometimes curious brown stones can be found that strongly resemble in structure and surface to an Arkansas Washita stone after cleaning. They are very hard and sometimes have a glassy surface.
Since the British almost always work with oil, the stones are difficult to recognize because the surface is black. Luckily I found a few stones whose edges were damaged so I could see the grain structure.
After cleaning and planing a few nice stones emerged.

Identifying
Hindostan whetstones are characterized by three different physical qualities:
* Highly weather resistant. The Hindustan whetstone owes its resistance to weathering on the composition of the quartz grains. Quartz is a mineral that is really immune to weathering. The granules are held together by a "glue" which is also composed of quartz.
* The color of the stone is usually brown with shades of off-white, light yellow-brown, light brown and sometimes has obvious rust streaks.
* The stone has on the side a succession of relatively thick and thin layers by tidal deposits, which are parallel to the flat faces of the stone, which are characteristic for Hindustan whetstone.
The siltstone layers resemble thick and thin cardboard sheets that are stacked together. One thick-thin layer is also called a 'couplet'. The couplets may differ in thickness.

The Hindustan whetstone material is siltstone formed in a shoal area, like Indiana had on the beach about three hundred million years ago, during the time known as the Pennsylvania period. The thicker and thinner layering is clearly the result of the variations that occur twice a day in the ebb and flood tidal currents when the sediments were deposited on a salt flats. The number of layers varies between 7 and 16 couplets (14-32 layers) every inch. Clearly some kind of metamorphosis happened during its formation which must be the cause of this exceptionally strong and hard siltstone.

The history of Hindostan whetstone
The fine-grained siltstone was already mined in 1795 in Orange County for use as a whetstone to sharpen knives and other utensils.
In the quarry was worked around 1820 first by the Prentiss family who lived in a city in Martin County called Hindustan. In the early 1820s, the Indiana whetstone was transported by wagons from quarries in Orange County to the rivers. Through the 'Lost River', the White, Wabash, Ohio and Mississippi the material came in New Orleans. From New Orleans it was shipped to New York and England. In England it coursed a lot of controversy, because the name was mistaken for Hindustani. That was the reason mining was almost stopped.

The work was continued after a change of ownership of the mines, and production rose to 4,000 items per year, about half of which found its way to England and some to South America. The large plates were used as gravestones because of the weather resistance are still very good looking. 'Hindostan Whetstone "is considered the first commercial company in Indiana and became a world leader in the manufacture of sharpening stones. The production of whetstone material culminated around 1840 and declined rapidly after 1850. The last mine was closed around 1980.

The use
The stone is very slow to use - about 50 strokes give a noticeably polished surface and one hundred or more strokes removes almost any small scratch from the blade of a knife. The speed is about the same as a translucent Arkansas stone or a Chinese 12K Guanxi stone.

The grain I can not measure but finishing with Llyn Idwal oilstone (LI is not as fine as a Charnley Forest) improved the appearance of the cut immense sharply.
The stones were widely used by carpenters and cabinet makers and are still very much sought after.



Characteristics of the stones

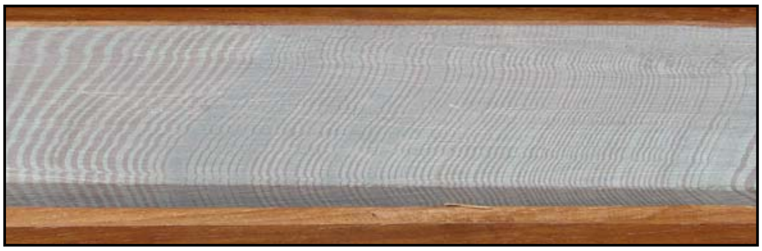
Material	Country	Color	Samples	Hardness gram min.	Hardness gram max.	g/cm³ min.	g/cm³ max.
Coticule	Belgium	Yellow	26	900	2000	2.18	3.26
Pískovec - sandstone	Tjechië	Brown	4	1500	2500	2.43	2.48
Bridlice - leisteen	Tjechië	Blue-gray	2	1500	1500	2.69	2.79
Mramor - marble	Tjechië	White	2	1500	1500	2.69	2.69
Bad Berleburg Mystery stone	Germany	White-brown	1	800	800	2.54	2.54
Spiegelberg sandstone	Germany	White-brown	2	2000	2000	2.09	2.09
Gildehauser sandstone	Germany	Yellow-white	4	2000	2000	1.93	1.93
Bentheimer sandstone	Germany	Red/brown	2	500	500	2.16	2.16
Charnley Forest Hone	England	Green with red spots	5	1000	1000	2.56	2.79
Moughton Whetstone	England	Green + red Stripes	15	1000	1500	2.58	2.80
Dark Blue Water of Ayr	Scotland	Blue + white spot	2	500	700	2.72	2.80
Water of Ayr	Scotland	Black-gray + black spots	0				
Tam O' Shanter	Scotland	Blue-crème spotted	6	1000	1700	2.34	2.64
White Tam O Shanter	Scotland	White-gray dotted	11	600	2000	2.34	2.65
Dalmore Blue	Scotland	Blue-black	6	1000	2000	2.40	2.70
Dalmore Yellow	Scotland	Yellow	5	1500	3000	2.03	2.30
Gwespyr Sandstone	Wales	Green-yellow	4	2000	2000	2.22	2.37
Llyn Idwal	Wales	Grayish-green	4	3000	3000	2.64	2.71
Dragon's Tongue	Wales	Red-blue-gray	4	500	1000	2.77	2.79
Paakkolan öljyhiettä	Finland	Blue-black	1	1000	1000	3.22	3.22
Wästikivi Oy	Finland	Grey	6	500	1000	2.57	2.77
Orivesi Kuntaliitoskivi	Finland	Blue	5	1000	1500	2.66	2.74
Eidsborg Ragstone	Norway	Gray- green	10	3000	3000	2.65	2.69
Heated Eidsborg	Norway	Gray -green to brown	11	1200	3000	2.48	2.69
Hyllestad millstone	Norway	Gray - green	4	3000	3000	3.00	3.00
Gotland sandstone.	Sweden	Grey	21	1000	3000	2.04	2.56
Lemunda sandstone	Sweden	Red – white – brown - yellow	10	1000	3000	2.09	2.57
Loosbryne	Sweden	Green – gray	16	500	1500	2.76	2.87
Orsa slipsten	Sweden	Pink - red	10	2000	3000	2.15	2.29
Rozsutec	Slovakia	Brown - blue	7	1500	1500	2.53	2.60

De bovenstaande waarde's zijn met grote zorgvuldigheid bepaald. In de praktijk kunnen ze afwijken door de grote variatie in natuurlijke slijp- en wetstenen. De hardheid is bepaald met de eigenbouw sclerometer zie hiervoor: http://bosq.home.xs4all.nl/info_20m-66.pdf bladzijde 32.

The above values are determined with great care. In practice, they differ by the great variety of natural grinding- and honestones. The hardness is determined by a DIY construction sclerometer see: http://bosq.home.xs4all.nl/grinding_and_honing_part2.pdf page 32.



Charnley Forest



Moughton



Dalmore Blue



Scots hone



Eidsborg Ragstone



Belgian Blue



Henk en Ge Bos



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